Josip Juraj Strossmayer University of Osijek
FACULTY OF AGROBIOTECHNICAL SCIENCES OSIJEK

CURRICULUM

Agriculture (University Undergraduate Study Programme)

Major in **ZOO-TECHNIQUE**

Academic year 2022 - 23

June, 2022

List of Teachers and Courses

Academic year 2022 - 23

Agriculture (University Undergraduate Study Programme)

Major in **ZOO-TECHNIQUE**

A full-time Study Programme

I.semester

COORDINATOR	COURSE NAME	TEACHERS ON THE COURSE AND TYPE OF CLASSES						ECTS
		NAME AND SURNAME	LECTURES	SEMINARES	EXERCISES			
					FE	AE	LE	
Tihomir Živić	German Language I	Tihomir Živić	30			45		5
Tihomir Živić	English Language I	Tihomir Živić	30			45		5
Vesna Rastija	Chemistry	Vesna Rastija	45					6
		Maja Karnaš				9	6	
		Domagoj Šubarić				9	6	
Maja Petrač	Mathematics	Maja Petrač	45			30		6
Edita Štefanić	General Botany and Zoology	Edita Štefanić	25					6
		Siniša Ozimec	20					
		Sanda Rašić					15	
		Tihomir Florijančić					5	
		Ivica Bošković					5	
David Kranjac	Basics of Agricultural Economics	David Kranjac	30					6
		Tihana Sudarić	15					
		Krunoslav Zmaić	15					
		Lucija Bencarić		15				
Krešimir Ižaković	Physical education and sports	Krešimir Ižaković			30			1

II. semester

COORDINATOR	COURSE NAME	TEACHERS ON THE COURSE AND TYPE OF CLASSES						ECTS
		NAME AND SURNAME	LECTURES	SEMINARES	EXERCISES			
					FE	AE	LE	
Tihomir Živić	German Language II	Tihomir Živić	30			45		5
Tihomir Živić	English Language II	Tihomir Živić	30			45		5
Vesna Gantner	Principles of Animal Breeding	Vesna Gantner Mirna Gavran	45			 30		6
Bojana Brozović	Basics of agro-meteorology	Danijel Jug Bojana Brozović Irena Jug	25 15 20	5 5 5				6
Goran Heffer	Basics of Agricultural Mechanical Engineering	Goran Heffer Željko Barač Ivan Vidaković Goran Pačarek	50 15			 5 5		6
Nikola Raguž	Basics of Genetics and Selection	Nikola Raguž Sonja Petrović Boris Lukić	20 25 5			 13 12		6
Krešimir Ižaković	Physical education and sports	Krešimir Ižaković				30		1

III. semester

COORDINATOR	COURSE NAME	TEACHERS ON THE COURSE AND TYPE OF CLASSES						ECTS
		NAME AND SURNAME	LECTURES	SEMINARES	EXERCISES			
					FE	AE	LE	
Drago Bešlo	Basics of Biochemistry and Microbiology	Drago Bešlo Suzana Kristek Dejan Agić Jurica Jović	40 20				 8 7	
Marcela Šperanda	Anatomy and Physiology of Domestic Animals	Mislav Đidara Marcela Šperanda	10 45			20		6
Matija Domaćinović	Basics of nutrition and production of fodder plants	Matija Domaćinović Gordana Bukvić Ranko Gantner Ivana Prakatur Mario Ronta	35 15 10			 5 10		6
Zvonko Antunović	Sheep and goat breeding I	Zvonko Antunović Josip Novoselec Željka Klir Šalavardić	30 20		 10	 15		6
Davor Kralik	Equipment and devices in animal husbandry	Davor Kralik	65		10			5
Mario Keškić	Physical education and sports	Mario Keškić			30			1

IV. semester

	COURSE NAME	TEACHERS ON THE COURSE AND TYPE OF CLASSES						ECTS
		NAME AND SURNAME	LECTURES	SEMINARES	EXERCISES			
					FE	AE	LE	
Pero Mijić	Cattle breeding I	Pero Mijić Tina Bobić	45		10	20		5
Vladimir Margeta	Pig breeding I	Danijela Samac Vladimir Margeta Kristina Gvozdanović	20 25 10			20		5
Zlata Kralik	Poultry I	Zlata Kralik	55	10		5	5	6
Mirjana Baban	Horse breeding I	Mirjana Baban Maja Gregić	40	10	15	10		5
Zvonimir Steiner	Special Feeding	Zvonimir Steiner Zvonko Antunović Josip Novoselec Mario Ronta	30 10 10		5 20			5
Marin Kovačić	Beekeeping	Zlatko Puškadija Marin Kovačić	5 15		20			3
Mario Keškić	Physical education and sports	Mario Keškić			30			1

V. semester

COORDINATOR	COURSE NAME	TEACHERS ON THE COURSE AND TYPE OF CLASSES						ECTS
		NAME AND SURNAME	LECTURES	SEMINARES	EXERCISES			
					FE	AE	LE	
Boris Antunović	Zoo-hygiene and Animal Health Protection	Boris Antunović Mislav Đidara	55 20					6
Anđelko Opačak	Fishery I	Anđelko Opačak Dinko Jelkić	45 5	2 3	3	8 PK	9	5
Tihomir Florijančić	Hunting I	Tihomir Florijančić Ivica Bošković	35 15			25		5
Goran Kušec	Animal Products I	Goran Kušec Ivona Djurkin Kušec	20 15	5 5	5 5	10	10	5
Jadranka Deže	Economics of livestock production	Jadranka Deže Igor Kralik Krunoslav Zmaić	15 15 10					3
	FINAL THESIS							6

VI. semester

COORDINATOR	COURSE NAME	TEACHERS ON THE COURSE AND TYPE OF CLASSES						ECTS
		NAME AND SURNAME	LECTURES	SEMINARES	EXERCISES			
					FE	AE	LE	
Andrijana Rebekić	Practical work I	Andrijana Rebekić			75			6
	Elective course							6
	Elective course							6
	Elective course							6
	Elective course							6

German Language I		
Coordinator	Tihomir Živić	
Collaborators	-	
Study year and semester	1st year, 1st semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (30 L + 45 E)
COURSE DESCRIPTION		
Course aims	The development of listening, speaking, reading, and writing skills, as well as the correct use of grammatical and vocabulary structures in the German language, within the field of agrobiotechnology.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, students will be able to: 1. Engage in an oral discussion based on a reading or listening comprehension of a foreign-language text or conversation; 2. Produce a written summary with a specified word count; 3. Interpret a text; 4. Apply newly acquired vocabulary and constructions in a new context; 5. Utilize information technology skills to gather information in a foreign language on a specific topic; 6. Analyze graphical data (tables, charts, maps, etc.); and 7. Write an essay or create a presentation on a related topic.		
Assessment and evaluation of student work during classes		
The right to take the final oral exam is granted by accumulating a minimum number of academic assessment points. These points are earned through attendance of at least 70% of classes (i.e., lectures and auditory exercises), active participation in class, and grades from partial written exams. During the semester, students will take two partial written exams (in the 7th and 15th weeks of instruction). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for receiving a positive final course grade.		
Obligatory literature		
1. Ertl, Josef, i dr. *Tausend Fragen für den jungen Landwirt*. 16. izd., Verlag Eugen Ulmer, 1996. 2. Glovacki-Bernardi, Zrinka. *Gramatika njemačkog jezika—osnove*. Školska knjiga, 2017. 3. Haensch, Günther, i Gisela Haberkamp de Anton. *Wörterbuch der Landwirtschaft*. Verlag Eugen Ulmer, 1996. 4. Kljaić, Jasenka. *Hrvatsko-njemački praktični rječnik*. Školska knjiga, 2017. 5. ———. *Njemačko-hrvatski praktični rječnik*. Školska knjiga, 1998. 6. Leitner, Hans. *Njemačko-hrvatski rječnik glagola u kontekstu*. Školska knjiga, 1998. 7. Marčetić, Tamara. *Njemački za odrasle*. Školska knjiga, 1997. 8. Matas, Đurđa. *Četverojezični rječnik hrvatsko-njemačko-englesko-latinski: oko 60.000 leksičkih jedinica iz poljoprivrede, šumarstva, veterine, primijenjene biologije*. Profil International, 1999.		
Additional literature		
1. Bašić, Zlatko. *Veliki hrvatsko-njemački rječnik gospodarskog, pravnog, političkog i svakodnevnog stručnog nazivlja*. Bašić, 2000. 2. Marčetić, Tamara. *Njemački u komunikaciji*. Školska knjiga, 2005. 3. Matas, Đurđa. *Zoološki rječnik hrvatsko-njemačko-englesko-latinski*. Školska knjiga, 2009.		

English Language I		
Coordinator	Tihomir Živić	
Collaborators	-	
Study year and semester	1st year, 1st semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (30 L + 45 E)
COURSE DESCRIPTION		
Course aims	The development of listening, speaking, reading, and writing skills, as well as the correct use of grammatical and vocabulary structures in (American) English, within the field of agrobiotechnical studies.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, students will be able to: 1. Recognize and independently explain key Anglo-American terminology related to their respective fields in authentic (didacticized) Anglo-American scientific and professional texts; 2. Utilize prescribed specialist literature and multimedia sources at all levels (business promotional texts, product labels, work instructions, and scientific articles); 3. Comprehend and translate technical texts in (American) English; 4. Communicate accurately in (American) English within the field of agrobiotechnology; 5. Present agrobiotechnical content accurately in (American) English.		
Assessment and evaluation of student work during classes		
The right to take the final oral exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded through attendance of at least 70% of classes (i.e., lectures and listening exercises), active participation in class, and grades from partial written exams. During the semester, students will take two partial written exams (in the 7th and 15th weeks of instruction). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for achieving a final positive course grade.		
Obligatory literature		
1. Bratulić, Mirna. *Found in Translation: Handbook with Exercises*. Hrvatska sveučilišna naklada, 2010. 2. Gačić, Milica. *Gramatika engleskoga jezika struke*. Školska knjiga, 2009. 3. Murphy, Raymond, i dr. *Basic Grammar in Use Student's Book with Answers and Interactive eBook: Self-study Reference and Practice for Students of American English*. 4. izd., Cambridge UP, 2017. 4. Perković, Anica. *English in Agriculture*. Poljoprivredni fakultet Osijek, 2011. 5. Vujčić, Jasna, i Anica Perković. *English for Horticulturists*. Veleučilište u Slavonskome Brodu / Poljoprivredni fakultet Osijek, 2011.		
Additional literature		
1. Filipović, Rudolf. *Veliki englesko-hrvatski rječnik*. Školska knjiga, 2017. 2. Hlavac, Jim, i dr. *Translating from Croatian into English: A Handbook with Annotated Translations*. Hrvatska sveučilišna naklada, 2019. 3. Matas, Đurđa. *Četverojezični rječnik iz poljoprivrede, šumarstva, veterine i primijenjene biologije: hrvatsko-njemačko-englesko-latinski*. Profil, 1999. 4. Murphy, Raymond. *English Grammar in Use*. 5. izd., e-knjiga, Cambridge UP, 2019. 5. Ritz, Josip. *Hrvatsko-engleski i englesko-hrvatski agronomski rječnik*. Školska knjiga, 1996.		

CHEMISTRY		
Coordinator	Vesna Rastija	
Collaborators	Maja Karnaš Domagoj Šubarić	
Study year and semester	1st year, 1st semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (45 L + 30 E)
COURSE DESCRIPTION		
Course aims	Familiarizing students with the fundamentals of general, inorganic, and organic chemistry, chemical calculations, and practical work in the chemistry laboratory.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, the student will be able to: 1. Differentiate between types of substances. 2. Relate the electronic structure of atoms to the chemical and physical properties of elements. 3. Illustrate the formation and geometry of chemical bonds. 4. Explain chemical equilibrium and the energy changes occurring during chemical reactions. 5. Demonstrate the fundamental reactions of electron and proton transfer. 6. Assess the acid-base properties of chemical compounds. 7. Describe the structure, reactivity, and properties of basic inorganic compounds relevant to agronomy. 8. Distinguish the structures, properties, and reactivity of key types of organic compounds. 9. Solve basic stoichiometric problems. 10. Apply the principles of safe laboratory practices in performing basic techniques of qualitative and quantitative chemical analysis.		
Assessment and evaluation of student work during classes		
The right to access the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), active participation in class, and grades from partial exams. During the semester, students will take five partial exams (two from the exercises in the 6th and 13th weeks, and three from the lectures in the 8th, 11th, and 15th weeks). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.		
Obligatory literature		
1. Rastija, V. (2022): Odabrana predavanja iz opće i anorganske kemije (interna skripta) Fakultet agrobiotehničkih znanosti Osijek 2. Amić, D. (2008): Organska kemija za studente agronomske struke, Školska knjiga, Zagreb 3. Rastija, V. (2016.): Zbirka zadataka iz kemije, Fakultet agrobiotehničkih znanosti Osijek 4. Rastija, V.; Karnaš, M. (2020): Uvod u kemijsku analizu, priručnik za laboratorijske vježbe. Fakultet agrobiotehničkih znanosti Osijek		
Additional literature		
1. Filipović, I.Lipanović, S. (1995): Opća i anorganska kemija I. i II. dio, Školska knjiga, Zagreb 2. Sikirica, M. (2001.): Stehiometrija, Školska knjiga, Zagreb, 2001.		

MATHEMATICS		
Coordinator	Maja Petrač	
Collaborators	-	
Study year and semester	1st year, 1st semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (45 L + 30 E)
COURSE DESCRIPTION		
Course aims	Introduce students to fundamental concepts of functions, as well as methods of differential and integral calculus. The lectures will cover basic concepts and illustrate their applications. In the exercises, students are expected to master the appropriate techniques and become proficient in solving specific problems.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

Upon successful completion of the module, the student will be able to:

1. Apply knowledge of functions to specific professional problems.
2. Explain the concept of a string and the concept of string convergence. Distinguish between certain special strings.
3. Explain the concepts of a function's limit and continuity, and apply this knowledge to practical problems.
4. Apply differential calculus to specific problems (tangent and normal lines, monotonicity, local extrema, convexity, inflection points).
5. Interpret the concept and properties of definite and indefinite integrals, as well as improper integrals.
6. Apply new knowledge to specific problems, such as calculating the arc length of a curve, the area of a pseudo-trapezoid, the volume of a solid of revolution, etc.
7. Distinguish between types of differential equations and their solutions, and apply this knowledge to specific problems in the field.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), active participation in class, submission of homework assignments on Merlin (the e-learning platform), and partial exams. During the semester, students will take two partial exams. The final exam is mandatory, consisting of a written and/or oral component, and a passing grade on the final exam is a prerequisite for a positive final grade.

Obligatory literature

1. D. Jukić, R. Scitovski, Matematika I, Prehrambeno tehnološki fakultet, Odjel za matematiku, Osijek 2000.
2. B. P. Demidović, Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1986.

Additional literature

1. M. Crnjac, D. Jukić, R. Scitovski, Matematika, Osijek, 1994.
2. J. Pečarić i dr., Matematika za tehnološke fakultete, Zagreb, 1994.
3. S. Kurepa, Matematička analiza 1 i 2, Tehnička knjiga, Zagreb, 1972.
4. V. Devide i dr., Riješeni zadaci iz više matematike, Školska knjiga, Zagreb, 1979.

GENERAL BOTANY AND ZOOLOGY		
Coordinator	Edita Štefanić	
Collaborators	Tihomir Florijančić Siniša Ozimec Ivica Bošković Sanda Rašić	
Study year and semester	1st year, 1st semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (45 L + 30 E)
COURSE DESCRIPTION		
Course aims	To familiarize the student with fundamental knowledge of the structure of cells and the functions of tissues and plant organs (both vegetative and generative). To introduce and equip the student with the ability to independently interpret the structural and functional characteristics of members of the animal kingdom, with a focus on the anatomy, function, and ecology of animal organisms.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

Upon successful completion of the module, the student will be able to:

1. Describe the chemical foundation of plant cells (biogenic elements and chemical compounds in plant cells).
2. Investigate, identify, and describe the structure of plant cells.
3. Explain and analyze the cell cycle (mitosis and meiosis).
4. Differentiate and analyze plant tissues and organs.
5. Explain the reproduction and dispersion of plants.
6. List the characteristics and organization of animal organisms.
7. Use scientific nomenclature in zoological taxonomy.
8. Relate evolutionary processes and phylogenetic relationships among groups within the animal kingdom.
9. Differentiate the structural and functional specificities between groups within the animal kingdom.
10. Identify animal species and groups that are beneficial or harmful to agriculture.

Assessment and evaluation of student work during classes

Eligibility to take the final exam is granted by accumulating a minimum number of assessment points. These points are earned through class attendance (at least 70%), participation in class activities, and grades from partial exams. During the semester, students take two partial exams (in the 9th and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is written.

Obligatory literature

1. Bačić, T. (2003): Morfologija i anatomija bilja. Sveučilište J.J. Strossmayera u Osijeku, Pedagoški fakultet.
2. Denffer, D., Ziegler, H. (1988): Botanika, morfologija i fiziologija. Školska knjiga, Zagreb
3. Dubravec, K.(1996): Botanika. Agronomski fakultet Sveučilišta u Zagrebu.
4. Štefanić, E. (2005): Priručnik za vježbe iz agrobotanike. Sveučilište J.J. Strossmayera u Osijeku, Poljoprivredni fakultet.
5. Treer, T., Tucak, Z. (2004): Agrarna zoologija, II. dopunjeno izdanje. Školska knjiga, Zagreb.
6. Habdija, I., Primc Habdija, B., Radanović, I., Špoljar, M., Matoničkin Kepčija, R., Vujčić Karlo, S., Miliša, M., Ostojić, A., Sertić Perić, M. (2011): Protista – Protozoa i Metazoa – Invertebrata strukture i funkcije. Alfa d.d., Zagreb.
7. Bogut, I., Grbavac, J., Križek, I. (2013): Morfofiziologija probavnog sustava domaćih životinja i riba. Poljoprivredni fakultet, Osijek, Agronomski i prehrambeno-tehnološki fakultet, Mostar.

Additional literature

1. Lepeduš, H., Cesar, V. (2010): Onove biljne histologije i anatomije vegetativnih organa. Odjel za biologiju, Sveučilište J.J. Strossmayer u Osijeku
2. Matoničkin, I., Klobučar, G., Kučinić, M. (2010): Opća zoologija. Školska knjiga, Zagreb
3. Burnie, D. (2014): Životinje, velika ilustrirana enciklopedija, 3. izdanje. Mozaik knjiga, Zagreb

BASICS OF AGRICULTURAL ECONOMICS		
Coordinator	David Kranjac	
Collaborators	Krunoslav Zmaić Tihana Sudarić Lucija Bencarić	
Study year and semester	1st year, 1st semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (60 L + 15 S)
COURSE DESCRIPTION		
Course aims	To acquaint the candidates with the impact of economic laws on the behavior of economic phenomena through social reproduction and the role of agriculture in overall economic development.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, the student will be able to: 1. Explain the meaning and functions of agriculture in economic development. 2. Interpret the specific characteristics of agriculture and the laws governing production, distribution, exchange, and consumption. 3. Compare total, average, and marginal relationships in production functions. 4. Relate production isoquants and isocost curves, as well as the marginal rate of technical substitution, perfect substitutes, and complementary factors. 5. Calculate economic performance indicators. 6. Propose and compare selected thematic areas from various fields of agricultural economics.		
Assessment and evaluation of student work during classes		
Eligibility to take the final exam is granted by accumulating a minimum number of assessment points. These points are earned based on class attendance (at least 70%), participation in class activities, tasks during lectures and seminars, seminar evaluations, and grades from partial exams. During the semester, students are required to complete an seminar paper. The seminar paper must be presented orally, lasting between 10 and 15 minutes, accompanied by a PowerPoint presentation. The schedule for presentations will be arranged in advance. Additionally, students will take two partial exams (in the 7th and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam may be written or oral.		
Obligatory literature		
1. Zmaić, K. (2008): Osnove agroekonomike, Poljoprivredni fakultet u Osijeku. Osijek. 2. Baban Lj. (1999): Ogledi iz agrarne ekonomije. Ekonomski fakultet u Osijeku. Osijek. 3. Karić, M., Štefanić I. (1999): Troškovi i kalkulacije. Ekonomski fakultet u Osijeku. Osijek.		
Additional literature		
1. Gail L. Cramer and Clarence W. Jensen (1982): Agricultural Economics & Agribusiness. Second edition. Montana State University. New York. 2. Grgić, I., Franić, R., Cerjak, M., Mikuš, O., Hadelan, L., Mesić, Ž., Zrakić, M., Bokan, N. (2017): Priručnik iz agrarne ekonomike. Pojmovnik i osnovne metode. Zagreb: Sveučilište u Zagrebu, Agronomski fakultet 3. Žaja, M. (1991): Ekonomika proizvodnje, Školska knjiga, Zagreb.		

PHYSICAL EDUCATION AND SPORTS		
Coordinator	Krešimir Ižaković	
Collaborators	-	
Study year and semester	First year, I. semester	
Number of credits and mode of delivery	ECTS credits	1
	Number of hours (L+E+S)	30 (30E)
COURSE DESCRIPTION		
Course aims	The aim of Physical and Health Education is to train students to implement theoretical and motor skills that enable independent physical exercise for an improved quality of life.	
Course enrolment requirements		
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Independently perform physical exercises for an improved quality of life.		
Assessment and evaluation of student work during classes		
Attendance in classes, active participation during the teaching process, and participation in practical exercises with a minimum attendance of at least 70% of the total hours grants the right to receive positive descriptive grade.		
Obligatory literature		
Additional literature		

GERMAN LANGUAGE II		
Coordinator	Tihomir Živić	
Collaborators	-	
Study year and semester	1st year, 2nd semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (30 L + 45 E)
COURSE DESCRIPTION		
Course aims	The development of listening, speaking, reading, and writing skills, as well as the correct use of grammatical and vocabulary structures in the German language within the context of agrobiotechnical studies.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

Upon successful completion of the module, students will be able to:

1. Conduct an oral discussion based on a read text or a listened conversation in a foreign language.
2. Produce a written summary with a specified word count.
3. Interpret a text.
4. Apply acquired vocabulary and structures in a new context.
5. Use information technology skills to gather information in a foreign language related to a specific topic.
6. Analyze graphical data (tables, graphs, maps, etc.); and
7. Write an essay or prepare a presentation on a related topic.

Assessment and evaluation of student work during classes

Eligibility to take the final oral exam is granted by accumulating a minimum number of assessment points. These points are earned through attending at least 70% of classes (i.e., lectures and auditory exercises), active participation in class, and grades from partial written exams. During the semester, students will take two partial written exams (in the 7th and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final course grade.

Obligatory literature

1. Ertl, Josef, i dr. *Tausend Fragen für den jungen Landwirt*. 16. izd., Verlag Eugen Ulmer, 1996.
2. Glovacki-Bernardi, Zrinka. *Gramatika njemačkog jezika—osnove*. Školska knjiga, 2017.
3. Haensch, Günther, i Gisela Haberkamp de Anton. *Wörterbuch der Landwirtschaft*. Verlag Eugen Ulmer, 1996.
4. Kljaić, Jasenka. *Hrvatsko-njemački praktični rječnik*. Školska knjiga, 2017.
5. ———. *Njemačko-hrvatski praktični rječnik*. Školska knjiga, 1998.
6. Leitner, Hans. *Njemačko-hrvatski rječnik glagola u kontekstu*. Školska knjiga, 1998.
7. Marčetić, Tamara. *Njemački za odrasle*. Školska knjiga, 1997.
8. Matas, Đurđa. *Četverojezični rječnik hrvatsko-njemačko-englesko-latinski: oko 60.000 leksičkih jedinica iz poljoprivrede, šumarstva, veterine, primijenjene biologije*. Profil International, 1999.

Additional literature

1. Bašić, Zlatko. *Veliki hrvatsko-njemački rječnik gospodarskog, pravnog, političkog i svakodnevnog stručnog nazivlja*. Bašić, 2000.
2. Marčetić, Tamara. *Njemački u komunikaciji*. Školska knjiga, 2005.
3. Matas, Đurđa. *Zoološki rječnik hrvatsko-njemačko-englesko-latinski*. Školska knjiga, 2009.

ENGLISH LANGUAGE II		
Coordinator	Tihomir Živić	
Collaborators	-	
Study year and semester	1st year, 2nd semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (30 L + 45 E)
COURSE DESCRIPTION		
Course aims	The development of listening, speaking, reading, and writing skills, as well as the correct use of grammatical and vocabulary structures in American English within the context of agrobiotechnical studies.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, students will be able to: 1. Recognize and independently explain key Anglo-American terms relevant to their specific fields in authentic (didactic) Anglo-American scientific and professional texts. 2. Utilize prescribed specialist literature and multimedia sources at all levels (business promotional texts, product labels, instructions, and scientific articles). 3. Understand and translate technical texts in American English. 4. Communicate accurately in American English within the context of agrobiotechnical studies. 5. Present agrobiotechnical content accurately in American English.		
Assessment and evaluation of student work during classes		
Eligibility to take the final oral exam is granted by accumulating a minimum number of assessment points. These points are earned through attending at least 70% of classes (i.e., lectures and auditory exercises), active participation in class, and grades from partial written exams. During the semester, students will take two partial written exams (in the 7th and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade.		
Obligatory literature		
1. Bratulić, Mirna. *Found in Translation: Handbook with Exercises*. Hrvatska sveučilišna naklada, 2010. 2. Gačić, Milica. *Gramatika engleskoga jezika struke*. Školska knjiga, 2009. 3. Murphy, Raymond, i dr. *Basic Grammar in Use Student's Book with Answers and Interactive eBook: Self-study Reference and Practice for Students of American English*. 4. izd., Cambridge UP, 2017. 4. Perković, Anica. *English in Agriculture*. Poljoprivredni fakultet Osijek, 2011. 5. Vujčić, Jasna, i Anica Perković. *English for Horticulturists*. Veleučilište u Slavonskome Brodu / Poljoprivredni fakultet Osijek, 2011.		
Additional literature		
1. Filipović, Rudolf. *Veliki englesko-hrvatski rječnik*. Školska knjiga, 2017. 2. Hlavac, Jim, i dr. *Translating from Croatian into English: A Handbook with Annotated Translations*. Hrvatska sveučilišna naklada, 2019. 3. Matas, Đurđa. *Četverojezični rječnik iz poljoprivrede, šumarstva, veterine i primijenjene biologije: hrvatsko-njemačko-englesko-latinski*. Profil, 1999		

PRINCIPLES OF ANIMAL BREEDING		
Coordinator	Vesna Gantner	
Collaborators	Mirna Gavran	
Study year and semester	1st year, 2nd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (45 L + 30 E)
COURSE DESCRIPTION		
Course aims	To introduce undergraduate students to the basics of livestock breeding, including the origin of domestic animals and breeds, the causes and significance of hereditary and non-hereditary variability of general and productive traits, with the aim of understanding breeding and selection methods.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

Upon successful completion of the module, the student will be able to:

1. Explain the importance and role of animal husbandry as an agricultural and scientific discipline.
2. Describe the process of domestication and the concept of domestic animals.
3. Recognize the concept of breed, and the properties of phenotype and genotype.
4. Differentiate between the causes of hereditary and non-hereditary variability in the traits of domestic animals.
5. Explain the significance of fertility, growth, and development abilities from both a biological and economic perspective.
6. Apply basic statistical methods to describe the variability and relationships of quantitative traits.
7. Differentiate between general and productive traits of domestic animals.
8. Describe breeding methods for domestic animals.
9. Differentiate the general principles of breeding programs.

Assessment and evaluation of student work during classes

Student Obligations

Attendance at lectures and exercises, as well as active participation in class, is required. During the semester, two partial written exams (theory + exercises) will be held. On the first day of class, students will be introduced to the course content (list of thematic units), the schedule for written exams, and the list of mandatory and recommended literature. Only students who have attended at least 70% of the lectures and exercises will be allowed to take the partial and final written exams. Final exam is mandatory.

Obligatory literature

1. Kralik, Gordana; Adámek, Zdeněk; Baban, Mirjana; Bogut, Ivan; Gantner, Vesna; Ivanković, Stanko; Katavić, Ivan; Kralik, Davor; Kralik, Igor; Margeta, Vladimir; Pavličević, Jerko. (2011) Zootehnika. Poljoprivredni fakultet u Osijeku, Sveučilište Josipa Jurja Strossmayera u Osijeku. Osijek: Grafika Osijek. Sveučilišni udžbenik. ISBN: 978 – 953 – 6331 – 95 – 6
2. Gantner, Vesna; Barać Zdravko. (2014) Uzgojno-selekcijski rad u stočarstvu. Poljoprivredni fakultet u Osijeku, Sveučilište Josipa Jurja Strossmayera u Osijeku. Sveučilišni udžbenik. ISBN: 978 – 953 – 7871 – 35 – 2
3. Gantner, Vesna; Steiner, Zvonimir; Gregić Maja (2021) Principles of Animal Breeding and Feeding. Josip Juraj Strossmayer University of Osijek, Faculty of Agrobiotechnical Sciences Osijek. Sveučilišni udžbenik. ISBN: 978 – 953 – 7871 – 97 – 0

Additional literature

1. Brinzej i sur. (1991) Stočarstvo - poglavlje 1. Sveučilišni udžbenik. Školska knjiga. Zagreb.
2. Jovanovac, S. (2013) Principi uzgoja životinja. Sveučilišni udžbenik, Osijek.

Recent scientific and professional papers in the field of animal production, selection and breeding of domestic animals.

BASICS OF SOIL SCIENCE AND CROP PRODUCTION		
Coordinator	Bojana Brozović	
Collaborators	Irena Jug Danijel Jug	
Study year and semester	1st year, 2nd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (60 L + 15 S)
COURSE DESCRIPTION		
Course aims	To familiarize students with the fundamentals of plant production, soil science, and agro-meteorology.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After the successful completion of the module, the student will be able to:

1. Identify and describe the fundamental factors of agricultural production (climate, soil, and plants) and demonstrate their interrelationships.
2. Identify and describe the key meteorological elements and explain their impact on agricultural production within the climatic regions of the Republic of Croatia.
3. Describe the basic chemical, biological, and physical properties of soil.
4. Explain and interpret the significance of soil fertility, plant nutrition elements, and fertilization principles.
5. Explain the significance of soil tillage and the importance of selecting the appropriate tillage system in agroecosystems.
6. Define and describe the importance of agrotechnical measures and procedures in relation to the crop production system.
7. Discuss, argue, and critically assess a given topic in the fields of plant cultivation and agrometeorology.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), participation in class activities, grades from seminar papers, and grades from partial exams. During the semester, students take three partial exams (in the 6th, 12th, and 15th weeks of the course) and present three seminar papers, each of which is individually graded. The final grade for each seminar paper is the average of these individual grades. The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.

Obligatory literature

1. Jug, I., Jug, D., Brozović, B., Vukadinović, V., Đurđević, B. (2022): Osnove tloznanstva i biljne proizvodnje. Fakultet agrobiotehničkih znanosti Osijek.
2. Penzar, I., Penzar, B. (2000): Agrometeorologija, Školska knjiga, Zagreb.
3. Jug, D., Birkas, M., Kisić, I. (2015): Obrada tla u agroekološkim okvirima, Hrvatsko društvo za proučavanje obrade tla.
4. Jug, D., Stipešević, B., Jug, I., Mesić, M. (2011): Agroklimatološki pojmovnik, Poljoprivredni fakultet u Osijeku.
5. Vukadinović, V., Vukadinović, V. (2011): Ishrana bilja, Poljoprivredni fakultet u Osijeku

Additional literature

1. Bašić, F., Herceg, N. (2010): Temelji uzgoja bilja. Synopsis, Zagreb.
2. Penzar, B. i sur. (1996): Meteorologija za korisnike, Školska knjiga, Zagreb.
3. Marschner, H. (1995): Mineral nutrition of higher plants, Academic Press.
4. Adel El titi (2010): Soil Tillage in Agroecosystems, CRC Press.

BASICS OF AGRICULTURA TECHNIQUES		
Coordinator	Goran Heffer	
Collaborators	Željko Barač Ivan Vidaković Goran Pačarek	
Study year and semester	1st year, 2nd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (65 L + 10 E)
COURSE DESCRIPTION		
Course aims	The aim is to familiarize students with basic engineering knowledge in the fields of technical materials, mechanics, components of agricultural machines, and internal combustion engines. This foundational knowledge will serve as a basis for following other courses in the later years of study and will be applied in the operation and exploitation of agricultural machinery, particularly in the field of Animal Husbandry (Zoo-technics).	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Categorize the basic types of technical materials. 2. Understand and describe the relationship between the structure and properties of technical materials. 3. Define the fundamental principles of mechanics and their practical applications. 4. Analyze the relationship between loading, stress, and deformation. 5. Describe the basic types of machine components and their applications. 6. Identify machine components used in agricultural machinery. 7. Define key concepts in the field of internal combustion engines. 8. Identify and describe the basic components of a tractor and explain their functions.		
Assessment and evaluation of student work during classes		
Students are expected to attend classes regularly and actively participate during lectures. During the semester, four partial written exams will be held. At the beginning of the semester, students will be informed of the exact dates for these partial exams. After the lectures have been completed, students will take the final exam. The final exam is mandatory. Students are advised to take notes during lectures and prepare for the exams using the required literature.		
Obligatory literature		
1. Vujčić, M.; Emert, R.; Jurić, T.; Heffer, G.; Baličević, P.; Pandurović, T.; Plaščak, I. (2011): Osnove poljoprivrednog strojarstva, Poljoprivredni fakultet Osijek		
Additional literature		
1. Filetin, T.; Kovačiček, F.; Indof, J. (2002): Svojstva i primjena materijala, FSB, Zagreb 2. Franz, M. (1998): Mehanička svojstva materijala, FSB, Zagreb 3. Vujčić, M. (1989): Tehnička mehanika I, Poljoprivredni fakultet Vinkovci 4. Vujčić, M. (1994): Tehnička mehanika II, Iskra, Vinkovci 5. Hercigonja, E. (1995): Elementi strojeva, Školska knjiga, Zagreb 6. Čevra, A. (1994): Motori i motorna vozila 1 i 2, Školska knjiga, Zagreb		

BASICS OF GENETICS AND SELECTION		
Coordinator	Nikola Raguž	
Collaborators	Sonja Petrović Boris Lukić	
Study year and semester	1st year, 2nd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (50 L + 25 E)
COURSE DESCRIPTION		
Course aims	The aim is to familiarize students with the fundamental laws of inheritance and basic concepts related to the selection of domestic animals.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Describe and identify the prokaryotic and eukaryotic components of the cell and their roles in the cell cycle and during reproduction (mitosis, meiosis, and post-meiotic divisions).
2. Describe and explain the structure of DNA and RNA, as well as the principles of genetic information transfer (protein synthesis).
3. Apply acquired knowledge of the complex inheritance mechanism, recognize and predict different inheritance patterns when solving problem-based tasks.
4. Explain the Hardy-Weinberg law of genetic equilibrium in populations and understand why and how systematic and random processes lead to changes in gene and genotype frequencies in a population.
5. Using prior knowledge of quantitative traits, explain the causes of variability in quantitative traits (P = G + E), and determine, using statistical methods, basic parameters of phenotypic variability and correlation (variance, standard deviation).
6. Explain the concept of heritability and calculate the heritability coefficient in simple exercises.
7. Explain the difference between genotypic and breeding value, as well as heritability.
8. Differentiate the effects of heterosis and inbreeding on the breeding and selection of domestic animals.
9. Assess the theoretical success of selection and apply acquired knowledge in simple exercises.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), participation in class activities, and grades from partial exams. During the semester, students will take three partial exams (in the 4th, 8th, and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.

Obligatory literature

1. Pavlica, Mirjana: Genetika. Mrežni udžbenik. Sveučilište u Zagrebu http://www.genetika.biol.pmf.unizg.hr/
2. Jovanovac, Sonja: Principi uzgoja životinja. Sveučilišni udžbenik, Osijek, 2013.
3. Petrović, Sonja: bilješke s predavanja i vježbi (PowerPoint prezentacija)
4. Raguž, Nikola: bilješke s predavanja i vježbi (PowerPoint prezentacija)
5. Lukić, Boris: bilješke s predavanja i vježbi (PowerPoint prezentacija)

Additional literature

1. Falconer, D.S., Mackay, T.F.C. (1995): Introduction to quantitative genetics. Fourth edition.
2. Oldenbroek, K., van der Waaij, L.: Textbook animal breeding. Animal breeding and genetics for BSc students.

PHYSICAL EDUCATION AND SPORTS		
Coordinator	Krešimir Ižaković	
Collaborators	-	
Study year and semester	First year, II. semester	
Number of credits and mode of delivery	ECTS credits	1
	Number of hours (L+E+S)	30 (30E)
COURSE DESCRIPTION		
Course aims	The aim of Physical and Health Education is to train students to implement theoretical and motor skills that enable independent physical exercise for an improved quality of life.	
Course enrolment requirements		
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Independently perform physical exercises for an improved quality of life.		
Assessment and evaluation of student work during classes		
Attendance in classes, active participation during the teaching process, and participation in practical exercises with a minimum attendance of at least 70% of the total hours grants the right to receive positive descriptive grade.		
Obligatory literature		
Additional literature		

BASICS OF BIOCHEMISTRY AND MICROBIOLOGY		
Coordinator	Drago Bešlo	
Collaborators	Dejan Agić Suzana Kristek Jurica Jović	
Study year and semester	2nd year, 3rd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (60 L + 15 E)
COURSE DESCRIPTION		
Course aims	The aim is to familiarize students with the structure of macromolecules and their functions within the cell. This includes the structure of biological membranes and the mechanisms through which molecules pass through membranes. The module will introduce students to metabolism, energy transfer and storage, as well as the synthesis of molecules from which macromolecules are built. Additionally, students will learn about the transfer and storage of information. In the laboratory, students will be introduced to tools and techniques used in protein and DNA research.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Explain the structure of the cell and the importance of organelles. Describe the properties and characteristics of the membrane and the passage of molecules through membranes.
2. Understand the characteristics of macromolecules in the cell, their roles, and the catabolic and anabolic reactions. Recognize the importance of information transfer and storage in the cell.
3. Describe the structure, properties, and functions of macromolecules within the cell.
4. Connect the spatial structure of molecules with the importance of their spatial configuration for cellular reactions.
5. Recognize the importance of metabolism and the synthesis and degradation of universal energy in the cell (ATP).
6. Distinguish between catabolic reactions and the mechanisms regulating catabolic processes.
7. Identify anabolic reactions and biosynthetic precursors, as well as the regulatory mechanisms of macromolecule precursor synthesis.
8. Recognize the importance of DNA and the control of gene expression, as well as the mechanisms of gene redistribution.
9. Understand the significance of working in a biochemical laboratory and the importance of accurate result interpretation.
10. Differentiate between microorganisms, their physiology, and their distribution.
11. Understand that knowledge of biochemistry and microbiology helps students develop critical thinking, logical reasoning, and problem-solving skills in agricultural sciences based on the knowledge acquired.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), participation in class activities, and grades from partial exams. During the semester, students will take five partial exams (in the 3rd, 6th, 9th, 12th, and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam consists of both written and oral components.

Obligatory literature

1. Berg Jeremy M, Tymoczko John L., Stryer Lubert (2013), Biokemija, 6. izdanje engleskog i 1. izdanje hrvatsko, Školska knjiga, Zagreb
2. Bešlo Drago (2014) Praktikum iz biokemije, Poljoprivredni fakultet u Osijeku.
3. EllioΣ, H. W. (2004): Biochemistry and molecular biology. Oxford University Press.
4. McMurry John and Castellion Mary (2003) Fundamentals General, Organic, and Biological Chemistry, Four Edition, Pentice hall, UK.

Additional literature

1. Alberts Bruce, Bray Dennis, Hopkin Karen, Johnson Alexander, Lewis Julian, Raff Martin, Roberts Keith, Peter Walter Peter (2004): Essential cell biology, Second Edition, Garland Science, UK.
2. Gatto Gregory, Berg Jeremy M, Stryer Lubert Tymoczko John L- (2019): Biochemistry, 9th Edition, MACMILLAN.
3. Harvey Lodish, Arnold Berk, S. Lawrence Zipursky, Paul Matsudaira, David Baltimore and Jemes Darnell (2000): Molecular cell biology, Fourth Edition, W. H. Freeman and Company, UK:
4. Voet Donald, Judith G. Voet (2011) Biochemistry, Fourth Edition, Wiley.

ANATOMY AND PHYSIOLOGY OF DOMESTIC ANIMALS		
Coordinator	Marcela Šperanda	
Collaborators	Mislav Đidara	
Study year and semester	2nd year, 3rd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (55 L + 20 E)
COURSE DESCRIPTION		
Course aims	The aim is to familiarize students with the morphology and basic functional principles of domestic animals. Students will study the functions of individual tissues and organ systems in a comparative manner.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Name the structures of the animal cell, differentiate the roles of individual organelles, and explain the processes occurring within them.
2. Distinguish between the basic mechanisms in physiology.
3. Identify the four basic types of animal tissues and interpret their functional significance within individual organs.
4. Recognize the parts of the animal body; classify and describe the bones, joints, and muscles of domestic animals.
5. Differentiate between the organs and organ systems of the thoracic, abdominal, and pelvic cavities.
6. List the organs of the circulatory, respiratory, lymphatic, digestive, nervous, urinary, and reproductive systems.
7. Interpret the structure and function of the heart, blood vessels, lungs, bone marrow, lymph nodes, thymus, stomach, rumen, intestines, liver, pancreas, kidneys, urinary bladder, ovaries, oviducts, uterus, vagina, testes, brain, spinal cord, and nerves.
8. Link the influence of neuroendocrine regulation on the function of the digestive and reproductive systems.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), participation in class activities, and grades from partial exams. During the semester, students will take two partial exams (in the 7th and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.

Obligatory literature

1. Liker B. (2000): Osnove fiziologije stanice, Agronomski fakultet Zagreb, Poljoprivredni fakultet u Osijeku
2. Liker B. (1999): Anatomija sustava za gibanje domaćih sisavaca, Agronomski fakultet, Zagreb
3. Šperanda M. (2008): Anatomija i fiziologija domaćih životinja, web skripta, Poljoprivredni fakultet u Osijeku
4. Stilinović Z. (1993): Fiziologija probave i resorpcije u domaćih životinja. Školska knjiga, Zagreb
5. Kozarić Z. (2000): Veterinarska histologija, Karolina, Zagreb
6. Konig, H.E., Liebig H-G. (2009): Anatomija domaćih sisavaca. Naklada Slap, Zagreb
7. Sjaastad O. V., Sand O., Hove K., (2017): Fiziologija domaćih životinja. Naklada Slap, Zagreb

Additional literature

1. Dyce, K. M., Sack, W. O., & Wensing, C. J. G. (2009) Textbook of Veterinary Anatomy*. Saunders. Philadelphia, London, New York, St. Louis, Sydney, Toronto.
2. Reece, W. O. (2010) Physiology of Domestic Animals.

BASICS OF NUTRITION AND PRODUCTION OF PLANTS		
Coordinator	Matija Domaćinović	
Collaborators	Ivana Prakatur Gordana Bukvić Ranko Gantner Mario Ronta	
Study year and semester	2nd year, 3rd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (60 L + 15 E)
COURSE DESCRIPTION		
Course aims	The aim is to familiarize students with the chemical composition and physiological function of nutrients in the bodies of domestic animals. The second part of the module focuses on presenting significant agrotechnical measures in the production of animal feed, as well as familiarizing students with the nutritional composition of these feeds and their practical application in animal nutrition.	
Course enrolment requirements	Chemistry, Anatomy and Physiology of Domestic Animals	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Distinguish the anatomical and physiological characteristics of the digestive systems of different animal species, define the concept of digestibility, and list and explain the factors that affect it.
2. Classify nutrients, list important representatives, and describe their physiological roles in the bodies of domestic animals.
3. Explain the calculation of the energy value of feed in practical, modern energy units.
4. Define feed and classify it according to type and nutrient concentration, origin, and water content.
5. Identify individual fresh and conserved forages, as well as concentrates and feed mixtures, and interpret their role in the diets of different animal species and categories.
6. Assess the significance and potential for feed production under the agroecological conditions of the Republic of Croatia.
7. Organize the technology for the production of different types of forage crops on arable land and pastures.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), participation in class activities, and grades from partial exams. During the semester, students will take four partial exams (held during the semester). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.

Obligatory literature

1. Domaćinović, M. (2006): Hranidba domaćih životinja, osnove hranidbe, krmiva, Poljoprivredni fakultet u Osijeku.
2. Domaćinović, M. (1999): Praktikum vježbi hranidbe domaćih životinja. Poljoprivredni fakultet u Osijeku.
3. Vuković, S. (1999): Krmno bilje. Sveučilišni udžbenik. Beograd. Srbija.

Additional literature

1. Stjepanović, M., Zimmer, R., Tucak, M., Bukvić, G., Popović, S., Štafa, Z. (2009): Lucerna. Sveučilišni udžbenik. Sveučilište J. J. Strossmayera u Osijeku, Poljoprivredni fakultet u Osijeku. Osijek, Hrvatska.
2. Stjepanović, M., Čupić, T., Gantner, R. (2012): Grašak. Sveučilišni udžbenik. Sveučilište J. J. Strossmayera u Osijeku, Poljoprivredni fakultet u Osijeku. Osijek, Hrvatska.
3. Stjepanović, M., Štafa, Z., Bukvić, G. (2008): Trave za proizvodnju krme i sjemena. Sveučilišni udžbenik. Hrvatska mljekarska udruga. Zagreb, Hrvatska.
4. Senčić, Đ., Z. Antunović, J. Novoselec, D. Samac, I. Prakatur, T. Bobić, Ž. Klir (2021): Tehnologija animalne proizvodnje (poglavlje 2.), Fakultet agrobiotehničkih znanosti Osijek.

SHEEP AND GOAT BREEDING I		
Coordinator	Zvonko Antunović	
Collaborators	Josip Novoselec Željka Klir Šalavardić	
Study year and semester	2nd year, 3rd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (50 L + 25 E)
COURSE DESCRIPTION		
Course aims	The aim is to familiarize students with the fundamental principles of breeding, selection, and production technologies in sheep and goat farming, with a focus on the production of meat, milk, wool, and fiber. The module also aims to train students to independently manage sheep and goat farms.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Explain the importance, current status, and future prospects of sheep and goat production in Croatia and globally.
2. Define the native breeds, types, and species of sheep and goats, and explain their domestication and breeding systems.
3. Clearly explain the basic biological indicators of sheep and goats and their anatomical and physiological characteristics. Define the factors affecting the production and quality of sheep and goat products (meat, milk, wool, skin, hair) and their specific uses.
4. Present the methods of inheritance and variability of quantitative and qualitative traits in sheep and goats, and analyze and independently manage breeding records in sheep and goat farming.
5. Describe the reproduction of sheep and goats, as well as the technology for producing lambs and kids. Explain lactation, milking, and housing for sheep and goats, and conduct milk yield control for sheep and goats.
6. Organize feeding plans for different categories of sheep and goats and independently manage the breeding and technological processes on sheep and goat farms.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are awarded based on class attendance (at least 70%), participation in class activities, and grades from partial exams. During the semester, students will take three partial exams (in the 5th, 9th, and 15th weeks of the course). The final exam is mandatory, and a passing grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.

Obligatory literature

1. Mioč, B. (2022): Uzgoj koza. Hrvatska mljekarska udruga. Zagreb.
2. Mioč, B., Pavić, V., Sušić, V. (2007): Ovčarstvo. Hrvatska mljekarska udruga. Zagreb.
3. Senčić, Đ., Antunović, Z., Novoselec, J., Samac, D., Prakatur, I., Bobić, T., Klir, Ž. (2021): Tehnologija stočarske proizvodnje (poglavlja: Ovčarstvo, Kozarstvo).. Fakultet agrobiotehničkih znanosti Osijek.

Additional literature

1. Gordon, J. (1997): Controlled reproduction in sheep and goats. Cab International.
2. Lőhle, K., Leucht, W. (1997): Ziegen und Shafe. Eugen Ulmer GmbH & Co.
3. Simmons, P., Eukarius, C. (2001): Raising sheep. Storeys books, Wermont.
4. Šakić, V., Katica, V., Ferizbegović, J. (2011): Uzgoj koza. Veterinarski fakultet Univerziteta u Sarajevu. Sarajevo.
5. Mioč, B., Pavić, V. (2002): Kozarstvo. Hrvatska mljekarska udruga. Zagreb.

MACHINES AND DEVICES IN ANIMAL HUSBANDRY		
Coordinator	Davor Kralik	
Collaborators		
Study year and semester	2nd year, 3rd semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+P+S)	75 (65 L + 10 P)
COURSE DESCRIPTION		
Course aims	Enable students to become familiar with the role of mechanization in modern livestock production.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Understand various technical systems used in livestock production processes. 2. Design and size milking systems. 3. Design and size systems for manure management and processing. 4. Define water requirements.		
Assessment and evaluation of student work during classes		
Student performance is regularly assessed throughout the teaching activities: attendance and participation in lectures and exercises are monitored. During the semester, students take three partial exams. Passing grades on the partial exams are a prerequisite for a positive final grade. Final exam is mandatory.		
Obligatory literature		
1. Gordana Kralik (2011) Zootehnika 2. Gordana Kralik (2009) Peradarstvo - biološki i zootehnički principi 3. Gordana Kralik (2007) Svinjogojstvo - biološki i zootehnički principi		
Additional literature		
1. Senčić, Đ., Pavičić Ž., Bukvić Ž. (1996): Intenzivno svinjogojstvo, Osijek 2. Biglbauer, M. (1997): Poljoprivredni objekti, Osijek 3. Šikić, D. (1980): Elementi projektiranja građevinskih firmi. Poljoprivredno graditeljstvo, Zagreb 4. Emert R., Bukvić Ž., Jurić T., Filipović D. (1997): Popravak poljoprivrednih strojeva		

PHYSICAL EDUCATION AND SPORTS		
Coordinator	Mario Keškić	
Collaborators	-	
Study year and semester	Second year, III. semester	
Number of credits and mode of delivery	ECTS credits	1
	Number of hours (L+E+S)	30 (30E)
COURSE DESCRIPTION		
Course aims	The aim of Physical and Health Education is to train students to implement theoretical and motor skills that enable independent physical exercise for an improved quality of life.	
Course enrolment requirements		
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Independently perform physical exercises for an improved quality of life.		
Assessment and evaluation of student work during classes		
Attendance in classes, active participation during the teaching process, and participation in practical exercises with a minimum attendance of at least 70% of the total hours grants the right to receive positive descriptive grade.		
Obligatory literature		
Additional literature		

CATTLE BREEDING I		
Coordinator	Pero Mijić	
Collaborators	Tina Bobić	
Study year and semester	2nd year, 4th semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (45 L + 30 E)
COURSE DESCRIPTION		
Course aims	Introduce students to the fundamental principles of cattle production, including the nutritional requirements of different cattle categories, disease prevention measures, cattle housing systems, and the tasks of maintaining records and pedigree documentation. Equip students with the skills necessary for independently managing a cattle farm.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, students will be able to:

1. Understand the specific characteristics of cattle farming in agricultural production and its economic significance.
2. Explain the origin of cattle and identify and describe the most important cattle breeds in Croatia and worldwide.
3. Recognize and explain modern technologies used in milk and beef production.
4. Organize work and independently manage technological processes for milk production based on the needs of different animal categories on dairy and beef farms.
5. Identify and explain the economic demands and risks associated with cattle farming.
6. Perform milk yield testing for cows and calculate production indicators for total and standardized lactation.
7. Organize an annual herd turnover plan, calculate herd reproductive efficiency, and develop a feeding plan for the herd.
8. Calculate labor costs, depreciation of the herd, facilities, and equipment.

Assessment and evaluation of student work during classes

The assessment and evaluation of student knowledge will be conducted in written and oral forms.
When determining the final grade, several factors are considered: continuous class participation (activity during classes, preparation for lessons, and reflective reviews of course content), continuous monitoring and evaluation of knowledge (partial exams), and the final oral exam. Final exam is mandatory.

Obligatory literature

1. Ivanković. A., Mijić, P. (2020): Govedarstvo. Agronomski fakultet, Sveučilište u Zagrebu; Fakultet agrobiotehničkih znanosti Osijek, Sveučilište J. J. Strossmayera u Osijeku, Zagreb.

Additional literature

1. Senčić, Đ., Antunović, Z., Novoselec, J., Samac, D., Prakatur, I., Bobić, T., Klir, Ž. (2021): Tehnologija animalne proizvodnje. Fakultet agrobiotehničkih znanosti Sveučilišta Josipa Jurja Strossmayera u Osijeku, Osijek.
2. Caput, P. (1996): Govedarstvo. Celeber, d.o.o., Zagreb.
3. Uremović, Z. (2004): Govedarstvo. Hrvatska mljekarska udruga, Zagreb.
4. Annual reports on the state of cattle breeding by the Croatian Food and Agriculture Agency.

PIG BREEDING I		
Coordinator	Vladimir Margeta	
Collaborators	Danijela Samac Kristina Gvozdanović	
Study year and semester	2nd year, 4th semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (45 L + 30 E)
COURSE DESCRIPTION		
Course aims	Introduce the participant to the significance of pig farming and the fundamentals of piglet and pork production.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Explain the significance and organization of pig farming, the characteristics of pigs and pig farms, the origin and breeds of domestic pigs, fatty (primitive) pig breeds, meat-fat (transitional) pig breeds, and meat (noble) pig breeds.
2. Describe methods of pig breeding, including purebred breeding, crossbreeding, hybridization, pig performance testing, progeny and combined testing, stress syndrome testing in pigs, biological testing of boars, and pig reproduction methods.
3. Enumerate methods for improving fertility in pigs (breeding-selection methods - inducing and synchronizing estrus, ovulation, and farrowing, estrus detection, artificial insemination, and embryo transfer).
4. Describe the feeding plan for pigs, the nutritional requirements of pigs, feeding methods on farms, pig housing, microclimatic conditions in housing, and housing systems.
5. Apply pig production technology, including the production of fattening pigs (fattening for meat, bacon, and lard), the quality of pig carcasses and meat.
6. Explain the management of production and breeding records in pig farming and assess the exterior of pigs
7. calculate daily gains, feed conversion, breeding indexes, and calculate the housing capacity for pigs as weel as the production volume of pigs by category
8. Organize pig production on farms with a closed production cycle.

Assessment and evaluation of student work during classes

The final grade for students will be based on continuous monitoring of their participation in classes (activity during lessons, preparation for class, and reflective reviews of course content), continuous assessment and testing of knowledge (partial exams), and the final written exam. Final exam is mandatory.
Class attendance is mandatory in accordance with the Regulations on Studies at the J.J. Strossmayer University of Osijek.

Obligatory literature

1. Senčić, Đ., Pavičić, Ž., Bukvić, Đ.: Intenzivno svinjogojstvo. Nova Zemlja, Osijek, 1996.
2. Kralik Gordana, Kušec, G., Kralik, D., Margeta, V.: Svinjogojstvo. Poljoprivredni fakultet u Osijeku, Osijek, 2007.

Additional literature

1. Brinzej et al. Stočarstvo. Školska knjiga, Zagreb, 1991.
2. Uremović Marija, Uremović , Z.: Svinjogojstvo. Agronomski fakultet Zagreb, 1997.
3. Comberg, G.: Schweinezucht. Verlag Eugen Ulmer, Stuttgart, 1978.
4. Hőges, J.: Alternativen in der Schweinechaltung. Verlag Euen Ulmer, 1998.
5. Whithemore, C.T.: Pig production. LGL London – New York, 1980.
6. Journals “Stočarstvo”, “Krmiva”, “Poljoprivreda”, “Pig Production”, “Feed Internationa”

POULTRY I		
Coordinator	Zlata Kralik	
Collaborators	-	
Study year and semester	2nd year, 4th semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (55 L + 10 E + 10 S)
COURSE DESCRIPTION		
Course aims	Introduce the participants to the significance of poultry farming and the fundamentals of poultry meat and egg production.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Compare the production and consumption of poultry products globally and in Croatia. 2. Assess the quality of poultry meat and eggs. 3. Identify the characteristics and role of poultry breeding. 4. Describe the specific features related to the morphology, physiology, and metabolism of poultry. 5. Explain the breeding methods used in poultry production. 6. Differentiate the similarities and differences in the production, growth, and reproduction of various poultry species. 7. Select appropriate equipment for facilities used in breeding different poultry species. 8. Discuss a given topic related to poultry production with appropriate arguments.		
Assessment and evaluation of student work during classes		
The final grade for the student will be based on the following factors: independent assignments, continuous monitoring of class participation (activity in class, preparation for lessons, reflective reviews of course content), seminar papers, written partial exams, and the oral exam. The evaluation of the independent assignment and seminar paper will consider the clarity, accuracy, and relevance of the information presented, as well as the overall (technical and visual) quality of the presentation. Class attendance is mandatory in accordance with the Regulations on Studies at the J.J. Strossmayer University of Osijek. If a student misses more than 30% of the total class hours, they will lose the right to attend a final exam..		
Obligatory literature		
1. Kralik, G., Has-Schon, E., Kralik, D., Šperanda, M. (2008): Peradarstvo - biološki i zootehnički principi. Sveučilišni udžbenik, Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, Grafika, Osijek. 2. Kralik G., Adamek, Z., Baban, M., Bogut, I., Gantner, V., Ivanković, S., Katavić, I., Kralik, D.,Kralik, I., Margeta, V., Pavličević, J. (2011): Zootehnika. Sveučilišni udžbenik, Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, Grafika d.o.o. Osijek. 3. Senčić, Đ., Samac, D. (2017): Jaja. Sveučilišni udžbenik, Poljoprivredni fakultet u Osijeku, Sveučilišta Josipa Jurja Strossmayera u Osijeku, Grafika d.o.o. Osijek.		
Additional literature		
1. Sim, J.S., Sunwoo, H.H. (2006): The amazing egg. University of Alberta, Canada. 2. Scientific journals: Poultry Science; British Poultry Science, Meat Science, Journal of Poultry Science, Animals, Poljoprivreda, Krmiva, Meso- Prvi hrvatski časopis o mesu, Proceedings from international scientific conferences..		

HORSE BREEDING I		
Coordinator	Mirjana Baban	
Collaborators	Maja Gregić	
Study year and semester	2nd year, 4th semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (55 L + 10 E + 10 S)
COURSE DESCRIPTION		
Course aims	Introduce students to the current state and prospects of horse breeding, the fundamentals of breeding work and selection in equine breeding, the nutritional aspects for different categories of horses, horse reproduction, disease prevention measures for horses, housing systems, horse care, and various methods of utilizing horses.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Understand the specific characteristics of horse breeding in agricultural production. Explain the importance, current state, and prospects of horse breeding in Croatia and globally. Define the original forms and types of horses and explain the origin of horses.
2. Recognize and describe the most important horse breeds in Croatia and worldwide. Explain the differences in horse coat colors, white and black markings, as well as temperament and disposition.
3. Explain the basic biological indicators of horses and their anatomical and physiological characteristics. Identify external defects and faults in horses.
4. Demonstrate the skills required for approaching a horse, grooming the coat and hooves. Analyze the techniques for measuring horses, understanding horse gaits, and the use of equestrian equipment.
5. Explain horse breeding systems and methods of horse utilization, as well as manage horse reproduction and selection.
6. Organize feeding plans for different categories of horses, describe various methods of housing horses, and manage technological processes in equine production.

Assessment and evaluation of student work during classes

The final grade will be based on the following factors: continuous monitoring of class participation (activity during lessons, preparation for class, and reflective reviews of course content), continuous knowledge assessment (two partial exams), and the seminar paper. Final exam is mandatory.

The evaluation of the seminar paper will consider the clarity, accuracy, and relevance of the information presented, as well as the overall (technical and visual) quality of the presentation.

Class attendance is mandatory in accordance with the Regulations on Studies at the J.J. Strossmayer University of Osijek. If a student misses more than 30% of the total class hours (more than 4 times), they will lose the right to attend a final exam.

Obligatory literature

1. Ivanković, A. (2004): Konjogojstvo. Hrvatsko agronomsko društvo, Zagreb.
2. Baban, M. (2011): Konjogojska proizvodnja. Poglavlje u knjizi: Kralik, G., Zdeněk, A., Baban, Mirjana, Bogut, I., Gantner, V., Ivanković, S., Katavić, I., Kralik, D., Kralik, I., Margeta, V., Pavličević, J. (2011): Zootehnika. Grafika, Osijek.

Additional literature

1. Baban M. (2011): Ekološki uzgoj konja. Poglavlje u knjizi: Senčić Đ., Antunović Z., Mijić P., Baban M., Puškadija Z. (2011):
2. Ekološka zootehnika. Poljoprivredni fakultet u Osijeku, Osijek.
3. Baban, M. (2014): Osnove rada s konjima. Priručnik. Udruga Mogu-terapijsko, rekreacijsko i sportsko jahanje. Gradska tiskara, Osijek.
4. Pejić, N. (1991): Ishrana konja. Poljoprivredni fakultet, Novi Sad.
5. Pejić, N. (1996): Konj – Equus Caballus. Poljoprivredni fakultet, Novi Sad.
6. Šerman, V. (2001): Hranidba konja. Hrvatsko agronomsko društvo. Zagreb.

7. Žiga, E. (2001): Konji – najpoznati je svjetske pasmine. Sarajevo.
8. Gantner, V., Barać, Z. (2014): Uzgojno-selekcijski rad u stočarstvu. Poljoprivredni fakultet. Osijek
9. Godišnja izvješća Hrvatske poljoprivredne agencije (HPA) o stanju u konjogojstvu.
10. Hrvatska poljoprivredna agencija (HPA): Procedure i upute u konjogojstvu.
11. Hrvatska poljoprivredna agencija (HPA): Nacionalni sustav i upute za identifikaciju i registraciju kopitara u Republici Hrvatskoj.
12. Scientific and professional papers.

SPECIAL FEEDING		
Coordinator	Zvonimir Steiner	
Collaborators	Zvonko Antunović Josip Novoselec Mario Ronta	
Study year and semester	2nd year, 4th semester	
Number of credits and mode of delivery	ECTS credits	5
	Contact hours (L+E+S)	75 (50 L + 25 E)
COURSE DESCRIPTION		
Course aims	Introduce students with animal needs for feed and fodder based on their anatomical and physiological characteristics (ruminants and non-ruminants).	
Course enrolment requirements	Basics of nutrition and production of fodder plants	
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Differentiate the anatomical and physiological characteristics of the digestive systems of various animals, define the concept of digestibility, and list and explain the factors that affect it. 2. Identify feeding problems in dairy cattle, calves, fattening beef cattle, and breeding heifers. 3. Identify feeding problems in pigs, sows, gilts, piglets, and fattening categories. 4. Identify feeding problems in sheep and goats. 5. Identify feeding problems in poultry, laying hens, broiler chickens, turkeys, geese, and ducks. Know how to prepare meals and mixtures for specific animal categories.		
Assessment and evaluation of student work during classes		
The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are earned based on class attendance (minimum 70%), class participation, and grades from partial exams. During the semester, students will take four partial exams. The final exam is mandatory, and a positive grade on the final exam is a prerequisite for a positive final grade. The final exam will be oral.		
Obligatory literature		
1. M. Domaćinović (2006): Hranidba domaćih životinja, Poljoprivredni fakultet Osijek 2006.. 2. M. Brinzej i sur. (1991) : Stočarstvo. Školska knjiga – Zagreb, 1991. 3. M. Domaćinović (1999) : Praktikum vježbi hranidbe domaćih životinja. Poljoprivredni fakultet u Osijeku, 1999. 4. B. Lukić i sur. (2018):Uzgoj crne slavonske svinje - Priručnik za uzgajivače i studente 5. Đ. Senčić i sur. (2010): Proizvodnja mesa Poljoprivredni fakultet Osijek 2006.		
Additional literature		

BEEKEEPING		
Coordinator	Marin Kovačić	
Collaborators	Zlatko Puškadija	
Study year and semester	2nd year, 4th semester	
Number of credits and mode of delivery	ECTS credits	4
	Contact hours (L+E+S)	40 (20 L + 20 E)
COURSE DESCRIPTION		
Course aims	Introduce students to the basics of bee anatomy and biology, the structure of the beehive, diseases, and the production of beekeeping products. The goal is for the student to be capable of independently managing a small-scale beekeeping operation after completing and passing the module.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

After successfully completing the module, the student will be able to:

1. Identify species of honeybees.
2. Describe the history of beekeeping.
3. Differentiate the types of beehives used in the Republic of Croatia.
4. Describe the anatomy and physiology of the bee and the beehive community.
5. Identify the symptoms of infectious and parasitic diseases in bees, poisoning, and recognize bee enemies.
6. Select the appropriate method for protecting bees from infectious and parasitic diseases.
7. Choose a location for setting up a stationary beekeeping operation, conduct environmental assessment, and organize the surrounding area.
8. Select the proper beekeeping tools and equipment needed for working in the apiary, producing bee products, and transporting beehives.
9. Organize a family-based beekeeping farm (OPG).
10. Plan the annual production of bee products on the farm (honey, pollen, propolis, wax).
11. Differentiate between types of honey.
12. Prepare products for everyday use from bee products.

Assessment and evaluation of student work during classes

The evaluation of students' work will be monitored regularly during the course activities, with the following weight distribution: attendance (5%), activity during lectures and exercises (5%), written partial exams (3 x 15%). Final exam (45 %) is mandatory.

Obligatory literature

1. Tucak, Z., Bačić, T., Horvat, S., Puškadija, Z. (2005): Pčelarstvo, treće prošireno izdanje. Poljoprivredni fakultet, Osijek.
2. Laktić, Z., Šekulja, D. (2008): Suvremeno pčelarstvo. Nakladni zavod Globus, Zagreb.
3. Goodman, L. (2003): Form and function in the honey bee, International Bee Research Association, Cardiff.

Additional literature

1. Winston, M.L. (1987): The biology of the honey bee, Harvard University Press, USA.

PHYSICAL EDUCATION AND SPORTS		
Coordinator	Mario Keškić	
Collaborators	-	
Study year and semester	Second year, IV. semester	
Number of credits and mode of delivery	ECTS credits	1
	Number of hours (L+E+S)	30 (30E)
COURSE DESCRIPTION		
Course aims	The aim of Physical and Health Education is to train students to implement theoretical and motor skills that enable independent physical exercise for an improved quality of life.	
Course enrolment requirements		
Intended course learning outcomes		
After successfully completing the module, the student will be able to: 1. Independently perform physical exercises for an improved quality of life.		
Assessment and evaluation of student work during classes		
Attendance in classes, active participation during the teaching process, and participation in practical exercises with a minimum attendance of at least 70% of the total hours grants the right to receive positive descriptive grade.		
Obligatory literature		
Additional literature		

ZOO-HYGIENE AND ANIMAL HEALTH PROTECTION		
Coordinator	Boris Antunović	
Collaborators	Mislav Đidara	
Study year and semester	3rd year, 5th semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (75 L)
COURSE DESCRIPTION		
Course aims	The objective is to familiarize students with the fundamental principles of zoohygiene and animal health protection, with an emphasis on recognizing sick animals and understanding the conditions that favor the development of animal diseases.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

Upon successful completion of the module, the student will be able to:

1. Describe the methods of approaching and restraining various species of domestic animals for examination and zootechnical procedures.
2. Differentiate the clinical examination methods used for diagnosing animal diseases.
3. Follow the clinical diagnostic procedure during the examination of an animal.
4. Select appropriate anamnesis questions for diagnosing animal diseases.
5. Utilize habitus examination, inspection of visible mucous membranes, hair, skin, and subcutaneous tissue, lymph node examination, and the measurement of vital signs (body temperature, pulse, respiration) to recognize sick animals.
6. Administer medications under the supervision of a veterinarian and in emergency situations.
7. Differentiate between physical and chemical factors of microclimate that may promote the development of diseases.
8. Identify favorable zoohygienic conditions for housing various species of domestic animals.
9. Perform assistance methods during the parturition of domestic animals.
10. Practice methods of disinfection, insect control, and rodent control.

Assessment and evaluation of student work during classes

To earn 6 ECTS credits, the student has the following obligations:
- Attend a minimum of 70% of the classes.
- Be actively engaged in class, which includes following the lessons, participating in discussions, and completing assigned tasks.
- Pass the final oral exam.

Attendance and active participation in lectures are required, final exam is mandatory.

Obligatory literature

1. Ramadan, P. i I. Harapin (1998): Interna klinička propedeutika domaćih životinja, Sveučilište u Zagrebu, Veterinarski fakultet, Zagreb.
2. Rupić, V. (2010): Zaštita zdravlja domaćih životinja (3. dio) – Fiziologija i patologija reprodukcije. Intergrafika Zagreb.
3. Asaj, A. (2003): Higijena na farmi i u okolišu. Medicinska naklada, Zagreb

Additional literature

1. Asaj, A. (1999): Zdravstvena dezinfekcija u nastambama i okolišu. Medicinska naklada, Zagreb.
2. Rupić, V. (2011): Zaštita zdravlja domaćih životinja (5. dio) – Dezinfekcija, dezinsekcija i deratizacija. Zrinski, Zagreb.
3. Veterinarski priručnik (2012) (VI. izmijenjeno izdanje), Vlasta Herak-Perković, Ž. Grabarević, J. Kos (urednici): Medicinska naklada, Zagreb.

FISHERY I		
Coordinator	Anđelko Opačak	
Collaborators	Dinko Jelkić	
Study year and semester	3rd year, 5th semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (50P + 20 E + 5 S)
COURSE DESCRIPTION		
Course aims	The objective is to introduce undergraduate students to the basics of freshwater fisheries and the principles of cultivating warm-water fish species.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, the student will be able to: 1. Identify freshwater fish species, their conservation status, and the causes of population decline. 2. Describe the anatomy of fish, recognize and explain the function of individual organs and organ systems. 3. Define categories of fish ponds and describe different methods of fish farming. 4. Describe fish farming technology, predict potential issues in freshwater fish farming based on ecological and biological factors, and select appropriate technological solutions. 5. Recognize the most common diseases in freshwater fish farming and describe methods of prevention and treatment. 6. Describe the dynamics of freshwater fish populations in open waters, methods of protecting fish populations, and explain the importance of freshwater fish as a food source.		
Assessment and evaluation of student work during classes		
The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are earned based on attending classes (at least 70%), active participation in class, and grades from partial exams. During the semester, students take two partial exams (in the 7th and 15th weeks of the course). The final exam is mandatory, and a positive grade on the final exam is a prerequisite for a positive final grade. The final exam is oral.		
Obligatory literature		
1. Bojčić, C. I sur. (1982): Slatkovodno ribarstvo. Jumena, Zagreb. 2. Livojević, Z. i sur. (1967): Priručnik za slatkovodno ribarstvo. Agronomski glasnik, Zagreb. 3. Mrakovčić, M., Brigić, A., Buj I., Ćaleta M., Mustafić P., Zanella D., (2006). Crvena knjiga slatkovodnih riba, Zagreb, Ministarstvo kulture, Državni zavod za zaštitu prirode, Republika Hrvatska. 4. Treer, T., Safner, R., Aničić, I., Lovrinov, M. (1995): Ribarstvo. Nakladni zavod Globus. Zagreb 5. Fijan, N. (2005): Zaštita zdravlja riba. Poljoprivredni fakultet Osijek. Osijek.		
Additional literature		
1. Opačak, A, Jelkić, D. (2020) Štetnici i neprijatelji riba na šaranskim ribnjacima. Fakultet agrobiotehničkih znanosti Osijek. Osijek. 2. Opačak, A. (2015): Hranidba riba. U: Domačinović, M., Antunović, Z., Džomba, E., Opačak, A:, Baban, M, Mužić S. (2015): Specijalna hranidba domaćih životinja. Poljoprivredni fakultet u Osijeku, Osijek		

HUNTING I		
Coordinator	Tihomir Florijančić	
Collaborators	Ivica Bošković	
Study year and semester	3rd year, 5th semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (50P + 25 E)
COURSE DESCRIPTION		
Course aims	The objective is to familiarize students with the biology and ecology of game species, the fundamentals of game management, and hunting dog handling.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, the student will be able to: 1. List the legal regulations governing hunting and compare them with hunting legislation in Europe and worldwide. 2. Describe the biological and ecological characteristics of animal species classified as game. 3. Interpret ecological factors of habitats in order to assess the economic capacity of hunting grounds and, based on this, plan management guidelines for different types of hunting grounds. 4. List and describe various types of hunting weapons and explain the ballistics of hunting firearms. 5. List and describe game trophies. 6. Recognize and describe specific breeds of hunting dogs and their uses.		
Assessment and evaluation of student work during classes		
Students are expected to attend classes regularly and actively participate in tasks during the lectures. In the second part of the semester, a field trip to a hunting ground will be organized, where students will observe the practical implementation of activities related to game management. Attendance at the field trip is mandatory. During the semester, two partial written exams will be held— the first covering hunting legislation, biology and ecology of game species, and hunting ground management, and the second covering game trophies, weapons, and hunting dog handling. Students will be informed about the exact dates of the partial exams at the beginning of the semester. The final exam is oral. Students are advised to take notes during lectures and prepare for the exams using the required literature. PowerPoint presentations will be used during lectures to help explain the content being discussed. These presentations will be available to students in digital form on the Merlin platform.		
Obligatory literature		
1. Tucak, Z. i sur. (2002): Lovstvo, drugo prošireno izdanje. Poljoprivredni fakultet u Osijeku 2. Tucak, Z. i sur. (2006): Zaštita divljači. Poljoprivredni fakultet u Osijeku. 3. Janicki, Z. i sur. (2007): Zoologija divljači. Veterinarski fakultet Sveučilišta u Zagrebu. 4. Anonimus : Zbirka zakonskih i podzakonskih propisa iz lovstva. Ministarstvo poljoprivrede		
Additional literature		
1. Mustapić, Z. (2004): Lovstvo. Hrvatski lovački savez, Zagreb. 2. Darabuš, S. et al. (2009): Osnove lovstva. Hrvatski lovački savez, Zagreb. 3. Frković, A. (2006): Priručnik za ocjenjivanje lovačkih trofeja. Hrvatski lovački savez, Zagreb.		

ANIMAL PRODUCTS I		
Coordinator	Goran Kušec	
Collaborators	Ivona Djurkin Kušec	
Study year and semester	3rd year, 5th semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (35 L + 30 E + 10 S)
COURSE DESCRIPTION		
Course aims	The objective is to introduce students to the basics of modern technology in the production and processing of animal products. Upon completing the module, students will be able to define and describe the most important animal products and explain their significance based on the factors that influence them and their chemical composition. Students will be able to differentiate and explain the methods for determining these products. They will also be trained to select appropriate zootechnical and other measures for producing high-quality raw materials and classify specific animal products according to systems for their quality classification.	
Course enrolment requirements	Basics of Biochemistry and Microbiology	
Intended course learning outcomes		
Upon successful completion of the module, the student will be able to: 1. Clearly define and explain different animal products. 2. Describe the chemical properties and quality of animal products. 3. Differentiate between production and technological processes in the production of animal products and propose the optimal type of production based on given conditions and purposes. 4. Define and explain the concept of quality. 5. Classify animal products based on quality. 6. Apply legal frameworks for determining the value of animal products. 7. Apply appropriate laboratory techniques for determining the qualitative and quantitative properties of animal products.		
Assessment and evaluation of student work during classes		
The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are earned based on attending classes (at least 70%), active participation in class, and grades from partial exams. Student performance is regularly monitored during the course activities: attendance (5%), participation in lectures and exercises (5%), written partial exam (45%), and final exam (45%).		
Obligatory literature		
1. Tratnik, Lj.: Mlijeko – tehnologija, biokemija i mikrobiologija, Hrvatska mljekarska udruga, 1998. 2. Lukač-Havranek, J., Rupić, V.: Mlijeko od farme do mljekare, Hrvatska mljekarska udruga, 2003. 3. Kralik, G., Kušec, G., Kralik, D., Margeta, V.: Svinjogojstvo – biološki i zootehničke principi, Poljoprivredni fakultet u Osijeku, 2008. 4. Rahelić, S.: Osnove tehnologije mesa, Školska knjiga, Zagreb, 1978. 5. Toldra, F.: Lawrie's Meat Science, Woodhead Publishing, 2017. 6. Peter, P.: New Aspects of Meat Quality (From Genes to Ethics), Woodhead Publishing, 2017. 5. Lawrence, T.L.J., Fowler, V.R.: Growth of farm animals, CABInternational, 1997.		
Additional literature		
1. Professional and scientific literature related to the issues related to animal products and the factors that influence their composition and quality. 2. Legislative and regulations related to animal products.		

ECONOMICS OF LIVESTOCK PRODUCTION		
Coordinator	Jadranka Deže	
Collaborators	Igor Kralik Krunoslav Zmaić	
Study year and semester	3rd year, 5th semester	
Number of credits and mode of delivery	ECTS credits	3
	Contact hours (L+E+S)	40 (40 L)
COURSE DESCRIPTION		
Course aims	The objective is to introduce students to the basics of modern technology in the production and processing of animal products. Upon completing the module, students will be able to define and describe the most important animal products and explain their significance based on the factors that influence them and their chemical composition. Students will be able to differentiate and explain the methods for determining these products. They will also be trained to select appropriate zootechnical and other measures for producing high-quality raw materials and classify specific animal products according to systems for their quality classification.	
Course enrolment requirements	No preconditions	

Intended course learning outcomes

Upon successful completion of the module, the student will be able to:

1. List the work procedures and describe the organization of production in cattle farming, pig farming, and poultry farming.
2. Calculate the break-even point of production and the critical business minimum.
3. Determine the goals, measures, and activities required to improve economic results.
4. Analyze the market for the supply and demand of livestock products.
5. Differentiate between market structures in livestock production.
6. Select options for using direct payment envelope funds, basic payments, green payments, payments for the first hectares, payments for young farmers, production-related payments, and maintain existing payment entitlements, as well as non-production-related subsidies.

Assessment and evaluation of student work during classes

The right to take the final exam is earned by accumulating a minimum number of assessment points. Assessment points are earned based on attending classes (at least 70%), active participation in class, and grades from partial exams. During the semester, students take three partial exams (in the 6th, 12th, and 15th weeks of the course). The final exam is mandatory, and a positive grade on the final exam is a prerequisite for a positive overall grade. The final exam is written.

Obligatory literature

1. Deže, J., i sur. (2008): Agroekonomika, Sveučilišni priručnik, Poljoprivredni fakultet Osijek, OBŽ, Osijek. https://www.obz.hr/hr/pdf/poljoprivredni_info_pult/2010/Agroekonomika.pdf
2. Domaćinović, M. i sur. (2008): Proizvodnja mlijeka, Sveučilišni priručnik, Poljoprivredni fakultet Osijek, OBŽ, Osijek. https://www.yumpu.com/xx/document/read/48228072/proizvodnja-mesa-pdf-16-mb-osjeako-baranjska-a-3-4-zupanija
3. Tolušić, Z. (2011): Tržište i distribucija poljoprivredno prehrambenih proizvoda, drugo dopunjeno izdanje, Poljoprivredni fakultet u Osijeku, Osijek
4. Zmaić, K. (2008): Osnove agroekonomike, Poljoprivredni fakultet u Osijeku, Osijek

Additional literature

1. Karić, M. (2002): Ekonomika poduzeća. Ekonomski fakultet u Osijeku, Osijek
2. Kralik, G. i sur. (2007): Svinjogojstvo-biološki i zootehnički principi, Sveučilište J.J. Strossmayera u Osijeku, Sveučilište u Mostaru
3. Kralik, G. i sur. (2008): Peradarstvo-biološki i zootehnički principi, Sveučilište J.J. Strossmayera u Osijeku, Sveučilište u Mostaru

PRACTICAL WORK I		
Coordinator	Andrijana Rebekić	
Collaborators	-	
Study year and semester	3rd year, 6th semester	
Number of credits and mode of delivery	ECTS credits	6
	Contact hours (L+E+S)	75 (75 E)
COURSE DESCRIPTION		
Course aims	The objective is to master the technological processes of production in livestock farming practice.	
Course enrolment requirements	No preconditions	
Intended course learning outcomes		
Upon successful completion of the module, the student will be able to: 1. Identify the specific stages of the production cycle for various branches of livestock production. 2. Define optimal production systems for different branches of livestock production. 3. Analyze the factors of cost-effectiveness in livestock production. 4. Recognize the basic genetic factors that influence production success. 5. Formulate alternative production systems in livestock farming that comply with animal welfare, health, and environmental protection criteria.		
Assessment and evaluation of student work during classes		
Students are expected to continuously participate in fieldwork and keep a mandatory work diary during practical classes. In shaping the final grade, the continuous monitoring of classes, participation in lessons, and practical work are taken into account. Attendance is mandatory according to the Regulations on Studies and Studying at the University of J.J. Strossmayer in Osijek.		
Obligatory literature		
Additional literature		