

Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 130672	APPLICATION OF MATHEMATICS AND INFORMATION TECHNOLOGY IN AGRICULTURE		ECTS credits: 4	
Professional	SUBJECT FOUNDATION		Semester: I	
study programme				
Teachers and accessions		Krunoslav Škrlec, Ph.D. college professor		
reachers and associates.		Marijan Čančarević, senior lecturer		
		Hours	ECTS	
Lectures		45	2	
Exercises and seminars		30	2	
Practical training		-		
Student workload outside active classes		56		
Total student workload		116	4	

SUBJECT OBJECTIVE: To introduce the students with principles of informatics and information and communication technology and its application. To introduce the students with basic mathematical knowledge needed for further education, professional activity, monitoring of contemporary development of society, economy, science and technology with reference to application in agricultural practice.

SUBJECT DESCRIPTION: The application of mathematics and information technology in agriculture aims to acquaint students with the basics of informatics and information technology and its application, as well as acquaint students with basic mathematical knowledge necessary for further education, professional activity, monitoring of contemporary socio-economic and scientific-technological development with reference to examples in agricultural practice.

LEARNING OUTCOMES

LEARNING OUTCOMES After passing the exam in the subject "Application of mathematics and information technology in agriculture", the student will be able to:
Learning outcomes of propaedeutic classes:
1. Calculate arithmetically and simplify an algebraic expression
2. Sketch the graph of a linear and quadratic function with zero points
3. Calculate the perimeter, area of triangles and quadrilaterals, and area and volume of geometric bodies
1. Calculate percentage, per mille, fourth proportional, mean value, extent, area and volume
2. Explain the parameters of statistical data, binomial and normal random variable
3. Apply matrix calculus and determinants,
4. Calculate the derivative, indefinite and definite integral of simple functions,
5. Define the basic architecture of the computer system,

6. Differentiate computer components,

7. Apply the Microsoft Office package for word processing, calculation and data presentation (Word, Excel, PPT)

8. Calculate basic mathematical operations in the Excel application, statistically process data and interpret them graphically

Literature:

Obligatory for studying and preparing for exam:

- 1. B. Plazibat, S. Jerčić (2001): INFORMATIKA, Veleučilište u Splitu, Split.
- 2. Čerić, V., Varga, M. I Birolla, H.: "Poslovno računarstvo", Znak, Zagreb, 1998.
- 3. Čančarević M., PRIMIJENJENA I NUMERIČKA MATEMATIKA, VSITE, Zagreb, 2016.

Supplementary:

- 1. Apsen B., REPETITORIJ ELEMENTARNE MATEMATIKE, Tehnička knjiga, Zagreb, 1984
- 2. Elezović, N., Dakić, B.: Matematika 1., 2., 3. i 4. Udžbenik i zbirka za gimnaziju, Element, Zagreb.
- 3. Rivier K., Čulina B., Čančarević M., MATEMATIKA 1, VSITE, Zagreb, 2010.

Subject holder: Krunoslav Škrlec, Ph.D., college professor



Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 161593 APPLIED CHEMISTRY		(ECTS credits: 5
Professional study programme SUBJECT FOUNDATIC		N	Semester: I
Teachers and associates:		Sonja Rajić – Bistrović, mag. educ. chem., lecturer	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with principles of chemistry and calculation in chemistry, as well as with application of chemistry in the field of agronomy.

SUBJECT DESCRIPTION: To acquaint students with the basics of chemistry and chemical calculus, the importance of chemical knowledge and the application of chemistry to the field of agronomy.

LEARNING OUTCOMES

1.	Explain the basics of chemistry and state the basic definitions and laws
2.	Explain the importance of biogenic chemical elements of chemical compounds that build a living
	organism and recognize their role in the life of plants and animals
3.	Properly handle laboratory utensils and accessories
4.	Qualitatively identify the cation or anion in an unknown sample and record the reaction using chemical
	reaction equations
5.	Independently calculate and volumetrically prepare solutions of given concentrations, and solve problem
	tasks from chemical calculus
6.	Describe the structures and mechanisms of characteristic reactions for a particular group of organic
	compounds
7.	Recognize and explain the processes of formation of organic substances and energy so that they can
	later be integrated into the teaching of professional subjects
8.	Logically connect the equations of the chemical reactions of glycolysis and the citric acid cycle
9.	Explain the basic principles of photosynthesis and cellular respiration in a plant cell
10.	Explain the factors that influence biochemical processes in plants
11.	To behave responsibly in future own production with minimal negative impact of harmful substances on
	the environment
12.	Work in a team, present expert content in the subject area

Literature:

Obligatory for studying and preparing for exam:

1. Amić, D., (2006.): "Kemija - izabrana poglavlja", Poljoprivredni fakultet u Osijeku

2. Amić, D., (2008.): "Organska kemija" za studente agronomske struke, Školska knjiga, Zagreb

3. Peterski, Sever, (1994.): Zbirka riješenih primjera i zadataka iz opće kemije, Profil International, Zagreb

4. Nothig-Hus, D., Herak, M., (1994.): "Opća kemija odabrana poglavlja", Školska knjiga, Zagreb

Supplementary:

1. Sikirica, M. (1984): "Stehiometrija", Izabrana poglavlja, Školska knjiga, Zagreb

2. Filipović, I., Lipanović, S. (1982.): "Opća i anorganska kemija", Školska knjiga, Zagreb

3. Nivaldo, J. Tro (2008): "Chemistry a molecular approach", Pearson Education United States of America, New Jersey

4. Pine Stanley H. i sur. (1984): "Organska kemija", Školska knjiga, Zagreb

5. Jurić, A. (2001): "Priručnik za vježbe iz kemije", Skripta, Visoko gospodarsko učilište u Križevcima, Križevci

6. Jurić, A., (1999): "Temelji kemije za studente nekemijskih studija", Skripta, Visoko gospodarsko učilište u Križevcima, Križevci

7. Vukobratović, M. (2014): "Osnove metabolizma biljaka", Skripta, Visoko gospodarsko učilište u Križevcima, Križevci

8. Jurić, A. (1999): "Kemija prirodnih spojeva", Skripta, Visoko gospodarsko učilište u Križevcima, Križevci 9. Pevalek-Kozina, B. (2003): "Fiziologija bilja", Profil International, Zagreb

10. Vukadinović V., Lončarić Z. (2002): "Ekofiziologija", Skripta, Poljoprivredni fakultet u Osijeku, Osijek

Subject holder: Sonja Rajić-Bistrović, mag. educ. chem., lecturer



Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 241275	PRINCIPLES OF ECOLOGY		ECTS credits: 2
Professional study			
programme	SUBJECT FOUNDATIO	ON	Semester: I
Teachers and associates:		Zvjezdana Augustinović, Ph. D., college professor	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: to acquaint students with basic organic principles and laws and interactions between organisms and their environment. The goal is also to develop awareness of the need to preserve the environment **SUBJECT DESCRIPTION:** The aim of the subject is to acquaint students with basic organic principles and laws and the interactions between organisms and their environment. The goal is also to develop awareness of the need to preserve the environment. Through the subject, students are introduced to the basic organic principles that are a necessary prerequisite for the proper management of natural resources and the preservation of the environment, as well as understanding the relationship between organisms and their environment. Through seminars, students are introduced to the most important negative anthropogenic impacts on natural ecosystems.

LEARNING OUTCOMES

1.	Define basic organic terms
2.	Explain the interdependence of living things and their environment
3.	Compare the adaptations of organisms with respect to abiotic and biotic environmental conditions
4.	Interpret trophic relationships in the ecosystem
5.	Explain the circulation of substances in the biosphere
6.	Recognize the impact of humans on the ecosystem and the need to maintain a balanced state in the ecosystem

Literature:

a) <u>Obligatory:</u>

- 1. Glavač, Vjekoslav (2001): Uvod u globalnu ekologiju, Intergrafika, Zagreb
- 2. Klepac, Ratimir (1988): Osnove ekologije, Jumena, Zagreb

b) <u>Supplementary:</u>

- 1. Herceg, Nevenko (2013): Okoliš i održivi razvoj, Synopsis d.o.o. Zagreb
- 2. Begon, M; Harper. J. L.; Townsend, C.R. (1996): Ecology, Blackwell Science
- 3. Dikić, D. i dr. 2001. Ekološki leksikon, Barbat, Zagreb
- 4. Delort, R.; Walter, F. 2002. Povijest europskog okoliša, Barbat, Zagreb

In Krizevci, September 2022

Subject holder: Zvjezdana Augustinović, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatoryCode: 241281PRINCIPLES OF AGRO		OCLIMATOLOGY	ECTS credits: 2,5
Professional study			
programme SUBJECT FOUNDATIO		ON	Semester: I
Teachers and associates:		Iva Rojnica, mag. ing. agr., lecturer	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		8	

SUBJECT OBJECTIVE: Through Principles of Agroclimatology, students will learn to define climate as a factor of biotopes and agrobiotopes, they will become familiar with basic meteorological elements, their measurement and influence on plant production.

SUBJECT DESCRIPTION: Through Principles of Agroclimatology, students will learn to define climate as a factor of biotopes and agrobiotopes, they will become familiar with basic meteorological elements, their measurement and influence on plant production.

LEARNING OUTCOMES

1.	Define each climate element and climate
2.	Describe the importance of agroclimatic indicators in agricultural production
3.	Describe the most important meteorological instruments
4.	Analyze climate data of different periods and areas

Literature:

a) <u>Obligatory:</u>

- 1. Dadaček, N., Peremin-Volf, Tomislava (2009): Agroklimatologija, Zrinski, Čakovec
- 5. Penzar, Ivan; Penzar, Branka (2000): Agroklimatologija, Školska knjiga, Zagreb



Iva Rojnica, mag. ing. agr., lecturer

Edition:

Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 241281 SOIL SCIENCE			ECTS credits: 5,5
Professional study programme SUBJECT FOUNDATIC		N	Semester: I
Teachers and associates:		Andrija Špoljar, Ph. D., college professor	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		8	

SUBJECT OBJECTIVE: get acquainted with pedogenetic factors and processes, physical, chemical and biological soil properties and soil classification in Croatia. The students will also gain experience in field work and laboratory work, they will learn to use ICT for the purpose of writing a professional report and they will learn to present results of their own research in public.

SUBJECT DESCRIPTION: The aim of the subject is to learn about pedogenetic factors and processes, physical, chemical and biological characteristics of soil and soil classification in Croatia. **LEARNING OUTCOMES**

LEARNING OUTCOMES		
Propedeutic teaching:		
Know basic definitions and processes from biology, chemistry and physics.		
Create a percentage share problem		
Pedology:		
1. List the facts related to the historical development of pedology		
2. Explain pedogenetic factors and processes		
3. Explain the external and internal morphological features of soil		
4. Explain the physical, chemical and biological characteristics of soil and soil fertility		
5. Classify soils according to classification principles and in space		
6. Make laboratory soil analyzes from soil samples taken in the field		
7. Make a water balance in the soil		
8. Interpret analytical data		
9. Use modern computer techniques in creating tables, graphs and text writing		
10. Recommend soil repair measures with the aim of improving agricultural production		
11. To present the results of one's own work		

Literature:

Obligatory for studying and preparing for exam:

Špoljar, A. (2015): Pedologija, udžbenik, Visoko gospodarsko učilište u Križevcima, Križevci.

Husnjak, S. (2014): Sistematika tala Hrvatske, udžbenik Sveučilišta u Zagrebu, Zagreb.

Šimunić, I., Špoljar, A.(2007): Tloznanstvo i popravak tla (II dio), skripta, Visoko gospodarsko učilište u Križevcima, Križevci.

Šimunić, I., Špoljar, A., Peremin Volf Tomislava (2007): Vježbe iz tloznanstva i popravka tla, skripta, Visoko gospodarsko učilište u Križevcima, Križevci.

Špoljar, A. (2007): Tloznanstvo i popravak tla (I dio), skripta, Visoko gospodarsko učilište u Križevcima, Križevci. <u>Supplementary</u>:

Bašić, F. (1982): Pedologija. Poljoprivredni institut Križevci, Sveučilište u Zagrebu, Zagreb.

Škorić, A. (1986): Priručnik za pedološka istraživanja. Fakultet poljoprivrednih znanosti Sveučilišta u Zagrebu, Zagreb.

Škorić, A. (1991): Sastav i svojstva tla. Fakultet poljoprivrednih znanosti Sveučilišta u Zagrebu, Zagreb.

Subject holder: Andrija Špoljar, Ph. D., college professor



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 241287 PRINCIPLES OF AGRI		ICULTURAL MACHINERY	ECTS credits: 6
Professional study programme	SUBJECT FOUNDATION		Semester: I and II
Teachers and associates:		Miomir Stojnović, M. Sc., senior lecturer Marija Jakuš Hrestak, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		30	

SUBJECT OBJECTIVE: introduce the students with principles of agricultural machinery in order to enable them to acquire competences, knowledge and skills of rational selection and usage of agricultural machines in contemporary technology of agricultural production.

SUBJECT DESCRIPTION: introduce the students with principles of agricultural machinery in order to enable them to acquire competences, knowledge and skills of rational selection and usage of agricultural machines in contemporary technology of agricultural production.

LEARNING OUTCOMES

After passing the exam the student will be able to:
1. Define and explain the significance and specifics of agricultural engineering
2. Interpret the properties and significance of machine materials in mechanical engineering
3. Calculate material stresses and dimensioning of machine elements
4. Describe and explain the working principle and construction of working and driving machines in agricultural
machinery
5. Calculate the power balance and work balance of the tractor
6. Plan the procurement and rational use of tractors and machines for agrotechnical interventions

Literature:

a) Obligatory:

- 1. Toufar, F. (1997): Tehnički materijali I, Školska knjiga, Zagreb
- 2. Hercigonja, E. (1998): Elementi strojeva, Školska knjiga, Zagreb
- 3. Stojnović, M. (1995): Motori s unutarnjim izgaranjem i poljoprivredni traktori, skripta, Križevci
- 4. **Stojnović, M.** (2021): Osnove poljoprivrednog strojarstva praktikum (zbirka riješenih zadataka), Visoko gospodarsko učilište u Križevcima, Križevci

5. *Jagar,N.,D. Filipović* (1997): Traktor na poljoprivrednim obiteljskim gospodarstvima, Hrvatski zadružni savez, Zagreb

b) <u>Supplementary</u>:

- 1. Jeras, D. (1992): Klipni motori, uređaji, Školska knjiga, Zagreb
- 2. Kalinić, Z. (2004): Motori s unutrašnjim izgaranjem, Školska knjiga, Zagreb
- 3. Koludrović, R. (1978): Tehnologija auto-materijala, Tehnička knjiga, Zagreb
- 4. Tomić, B. (1998): Osnove elektrotehnike, Školska knjiga, Zagreb

Subject holder:

Miomir Stojnović, M. Sc., senior lecturer



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 64007	COMMUNICATION SKILLS		ECTS credits: 2
Professional study	SUBJECT FOUNDATION		Semester: I
Teachers and associates:		Tomislav Ivanjko, Ph.D., assistant professor	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with theoretical framework and practical settings o communication skills, basic notions and preconditions of successful communication, types and forms of communication and specificities of application of communication skills in academic environment, with basic concept, process and methods of writing seminar papers, quoting and searching sources and with basic strategies of academic writing and presenting professional topics.

LEARNING OUTCOMES

LEARNING OUTCOMES

After passing the exam, the student will be able to:

1. Interpret concepts, processes and methods of communication in an academic environment

2. Know the specifics of oral and written academic communication

3. List the basic concepts, processes and methods of writing seminar papers

4. Apply basic methods of searching and evaluating scientific and professional information

5. Enumerate the ethical principles of using scientific and professional information and apply the rules of citation in scientific and professional papers

Literature:

Obligatory:

1. Žižak, A., Vizek Vidović, V. i Ajduković, M. (2012) Interpersonalna komunikacija u profesionalnom kontekstu. Zagreb, Edukacijsko-rehabilitacijski fakultet.

2. Hebrang Grgić, I., Ivanjko, T., Melinščak Zlodi, I. i Mučnjak, D. (2018) Citiranje u digitalnom okruženju: priručnik. Zagreb, Carnet.

3. Leinert-Novosel, S. (2015). Komunikacijski kompas. 2. prošireno izd. Zagreb : Plejada

Subject holder: Tomislav Ivanjko, Ph.D., assistant professor



Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 64015	ENGLISH LANGUAGE		ECTS credits: 6
Professional study programme	SUBJECT FOUNDATION		Semester: I and II
Teachers and associates:		Valentina Papić Bogadi, Ph. D., senior lecturer	
		Hours	
Lectures		45	
Exercises and seminars		45	
Practical training		-	

SUBJECT OBJECTIVE: to develop basic language competences with emphasis on language of agricultural profession; to develop skills of oral and written communication within topics related to agriculture, to enable student for autonomous presentation of data and facts related to agricultural profession in a foreign language.

LEARNING OUTCOMES

LEARNING	OUTCOMES
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After passing the exam, the student will be able to:

Learning outcomes of propaedeutic classes: Interpret knowledge of verb tenses in understanding and translating professional texts in the field of agriculture

1. Understand lectures and speeches and follow even complex arguments if the topic is familiar to them

2. Apply basic knowledge about topics covered in lectures

3. Describe basic terms and processes in the field of agriculture in English

4. Interpret articles and reports dealing with contemporary topics and problems in the field of agriculture in which the writer takes certain positions or expresses certain opinions

5. Apply the basic grammar rules learned in the exercises

6. Discuss in English about topics that are familiar to them, that are of personal interest or that relate to the wider field of agriculture

7. Use specific vocabulary related to agricultural products or production processes

8. Use learned expressions in combination with communication skills in active language production

Literature:

Obligatory for studying and preparing for exam:

Selected texts from the following titles:

O'Sullivan; Libbin (2011): Agriculture, Express Publishing

Gordana Mikulić (1989): English in Agriculture, Školska knjiga, Zagreb

Alan Mountford 1997): English in Agriculture, Oxford University Press

Josip Ritz (1996): Hrvatsko-engleski i englesko-hrvatski agronomski rječnik s latinsko-hrvatskim indeksom, Školska knjiga, Zagreb

<u>Supplementary:</u> Željko Bujas (1999): Veliki hrvatsko-engleski i englesko-hrvatski rječnik, Globus, Zagreb Dictionary of Agriculture (1996), Alan Stephens ed., Peter Collin Publishing

> Subject holder: Valentina Papić Bogadi, Ph. D., senior lecturer

VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1BEO CAL	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 64016	GERMAN LANGUAGE		ECTS credits: 6
Professional study programme	SUBJECT FOUNDATION		Semester: I and II
Teachers and associates:		Valentina Papić Bogadi, Ph. D., senior lecturer	
		Hours	
Lectures		45	
Exercises and seminars		45	
Practical training		-	

SUBJECT OBJECTIVE: to develop basic language competences with emphasis on language of agricultural profession; to develop skills of oral and written communication within topics related to agriculture, to enable student for autonomous presentation of data and facts related to agricultural profession in a foreign language.

LEARNING OUTCOMES

LEARNING OUTCOMES
After passing the exam, the student will be able to:
Learning outcomes of propaedeutic classes: Interpret knowledge of verb tenses in understanding and
translating professional texts in the field of agriculture
1. Understand lectures and speeches and follow even complex arguments if the topic is familiar to them
2. Apply basic knowledge about topics covered in lectures
3. Describe basic terms and processes in the field of agriculture in English
4. Interpret articles and reports dealing with contemporary topics and problems in the field of agriculture in
which the writer takes certain positions or expresses certain opinions
5. Apply the basic grammar rules learned in the exercises
6. Discuss in English about topics that are familiar to them, that are of personal interest or that relate to the
wider field of agriculture
7. Use specific vocabulary related to agricultural products or production processes
8. Use learned expressions in combination with communication skills in active language production

Literature:

Obligatory for studying and preparing for exam:

Selected texts from the following titles:

Goethe Institut, Fraus, Cornelsen: Kommunikation in der Landwirtschaft Oreščić, Ivana: Nemško strokovno berilo za agroživilstvo, Založba obzorja Maribor, 1996.

Supplementary:

Hueber Verlag: Themen Neu 2 – Lehrbuch Hueber Verlag: Themen Neu 2 – Arbeitsheft Klett Verlag: DaF kompakt Klett Verlag: Passwort Deutsch 2 Hueber Verlag: Tangram Deutsch als Fremdsprache: Kursbuch und Arbeitsbuch Hueber Verlag: Em Brückenkurs – Deutsch als Fremdsprache für die Mittelstufe

Subject holder: Valentina Papić Bogadi, Ph. D., senior lecturer

VGUK VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 35762 AGRICUL	TURAL BOTANY	ECTS credits: 4
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Professional study programme	SUBJECT FOUNDATION		Semester: II
Teachers and associates:		Siniša Srečec, Ph. D., college professor Renata Erhatić, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training			

SUBJECT OBJECTIVE: acquire necessary level of basic knowledge on plant species, their systematics, morphological, physiological and organic characteristics sufficient to synthesize new facts and procedures which will be acquired at graduate level subjects in the second and third year of study.

SUBJECT DESCRIPTION: The subject is taken in the first semester. It provides basic knowledge of morphology, anatomy and systematics of cultivated and weed plants.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Define external and internal morphological characteristics of plants			
2. Recognize the external and internal morphological characteristics of plants			
3. Explain the process of transpiration and transport of water and plant nutrients dissolved in water (symplast			
and apoplast)			
4. Explain the internal structure of the leaf with special reference to the position and role of the transpiration			
and assimilation parenchyma of the mesophyll in photosynthesis			
5. Explain the internal structure of the stem with special reference to the differences between			
monocotyledonous and dicotyledonous stems			
6. Explain the internal structure of the root with special reference to the role of individual tissues in the			
symplastic and apoplastic movement of water			
7. Explain the structure of the generative organs of gymnosperms and angiosperms			
8. Explain the processes of microsporogenesis, macrosporogenesis and double fertilization			
9. Systematize plant species into several taxonomic units			
10. Determine the representation of certain wild plant species on a certain area			
11. Assess the organic characteristics of a certain surface according to the representation of individual wild			
plant species			
12. Assess the economic value of vegetation cover in agricultural and/or natural plant communities.			

Literature:

Obligatory for studying and preparing for exam:

- 1. Srečec S. i Erhatić R. (2021.) <u>Poljoprivredna Botanika Sistematika višeg bilja</u>. (e-udžbenik) Visoko gospodarsko učilište u Križevcima. [ISBN 978-953-6205-40-0] https://www.vguk.hr/upload/E skripte/S Srecec/Poljoprivredna botanika - sistematika viseg bilja.pdf
- Žuna Pfeiffer, T., Krstin, L., Štolfa, I., Lovaković, T., Tikas, V. i Lepeduš, H. (2014) <u>Praktikum iz</u> <u>anatomije biljaka</u>. (tiskano izdanje i e-udžbenik) Osijek. Sveučilište Josipa Jurja Strossmayera u Osijeku ; Odjel za biologiju. [ISBN 978-953-6931-60-6] <u>http://biologija.unios.hr/webbio/wpcontent/uploads/2014/materijali/praktikum-iz-anatomije-biljaka.pdf</u>
- 3. Dubravec Katarina, (1996.): Botanika (sveučilišni udžbenik). Agronomski fakultet, Zagreb
- 4. **Denffer** D. i H. **Ziegler**, (**1988.** i ostala izdanja): Botanika Morfologija i fiziologija (Strasburgerova škola udžbenika botanike za visoke škole u prijevodu Z. Devidé-a). Školska knjiga, Zagreb

- 5. **Mägdefrau** K. i F. **Ehredorfer**, (**1988.** i ostala izdanja): Botanika Sistematika, evolucija i geobotanika (Strasburgerova škola udžbenika botanike za visoke škole u prijevodu R. Domca). Školska knjiga, Zagreb
- 6. **Gojković Plavšić** Nevenka, (**1985**.): Priručnik za izvođenje vježbi iz Poljoprivredne Botanike. Fakultet poljoprivrednih znanosti Sveučilišta u Zagrebu

Remark: Since the required literature belongs to the category of university textbooks that are adapted to postgraduate scientific and doctoral studies, multimedia lectures by the subject holder are available to every student in .pps and .doc format on CD-ROM(s) for easier understanding of the literature. Also, the same lectures can be found on the personal web pages of the vguk.hr domain subject holder.

- b) Supplementary:
- Srečec S., Kremer D., Benković M., *i sur.* (2020.) Taksonomija, ekologija i uporaba rogača (Ceratonia siliqua L.) i lovora (Laurus nobilis L.) u Hrvatskoj. Tomić, F. i Peklić, I. (urednici). (znanstvena monografija) Zagreb, Križevci, Hrvatska akademija znanosti i umjetnosti. [ISBN 978-953-347-348-2]
- Birgitta Bremer, Kåre Bremer, Mark W. Chase, Michael F. Fay, James L. Reveal, Douglas E. Soltis, Pamela S. Soltis and Peter F., Stevens, Arne A. Anderberg, Michael J. Moore, Richard G. Olmstead, Paula J. Rudall, Kenneth J., Sytsma, David C. Tank, Kenneth Wurdack, Jenny Q.-Y. Xiang and Sue Zmarzty (2009): An update of the Angiosperm Phylogeny Group Classification for the Orders and Families of Flowering Plants: APG III. Botanical Journal of the Linnean Society, 161, 105– 121.
- 3. Cooper G. M. (2000): The Cell. Sinauer Associates, Inc., Washington, D.C.
- 4. **Domac** R., (**1984**.): Mala flora Hrvatske i susjednih područja (priručnik za determinaciju samoniklih biljnih vrsta). Školska knjiga, Zagreb
- 5. **Dubravec** K. i **Dubravec** I. (**1989.**): Naše kultivirano bilje (priručnik za determinaciju kultiviranih biljnih vrsta). Znanje, Zagreb
 - 6. Hulina Nada (1996.): Korovi (sveučilišni udžbenik). Školska knjiga, Zagreb

7. Šilješ I., Đ. Grozdanić i I. Grgesina (1992.): Poznavanje, uzgoj i prerada ljekovitog bilja (sveučilišni udžbenik). Hrvatska akademija znanosti i umjetnosti i Školska knjiga, Zagreb

- 8. Grlić Lj., (1990.): Enciklopedija samoniklog jestivog bilja. August Cesarec, Zagreb
- 9. Kastory R. (1987.): Fiziologija biljaka (sveučilišni udžbenik). Naučna knjiga, Beograd
- 10. Nikolić R., S. Pavlović i P. Živanović, (1987.) Anatomija biljaka praktikum. Medicinska knjiga, Beograd Zagreb
- 11. Pavlica M., S. Srečec, D. Papeš (1996): Genotoxicity of herbicide Dicuran observed in bread wheat seedlings (*Triticum aestivum L. em Thell, cv. Pitoma*). Periodicum Biologorum, 98(3),

387-390.

- 12. Šarić T. (1986.): Atlas korova (priručnik i sveučilišni udžbenik), Svjetlost, Sarajevo
- 13. Kovačević J. (1971.): Poljoprivredna fitocenologija (sveučilišni udžbenik). Znanje, Zagreb
- 14. Srečec, S., Zechner-Krpan, V., Marag, S., Špoljarić, I., Kvaternjak, I., Mršić, G. (2011): Morphogenesis, volume and number of hop (Humulus lupulus L.) glandular trichomes, and their

influence on alpha acids accumulation in fresh bracts of hop cones. Acta botanica Croatica,

70(1): 1-8. DOI: 10.2478/v10184-010-0006-5.

- 15. **Srečec**, S., S. **Jelenić**, D. **Papeš (1995)**: Phenotypic and genotypic analysis of spike abnormality in bread wheat (Triticum aestivum L. em Thell) cv. Pitoma. Cereal Research Communications. 23(1-2), 63-69.
- 16. Swanson C. P. (editor) et al., (1960, 1964, 0 other/newer editions): The Cell. Prentice-Hall, Inc., New Yersey

17. Strasburger E., (1897.): Das Klaine Botanische Praktikum für Anfäger. Verlag von Gustav Fischer, Jena

c) Important links (exceptionally high quality illustrations and microfilms, useful for learning and understanding the anatomical properties of higher plants):

- 1. http://www.uri.edu/artsci/bio/plant_anatomy/images.html#lab_1
- 2. http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookPLANTANAT.html
- 3. http://www.dipbot.unict.it/sistematica_es/Magn_ind.html
- 4. http://www.arboretum.fullerton.edu/grow/primer/anat.asp

- 5. http://www.biologie.uni-hamburg.de/b-online/d47/47.htm
- 6. http://www.enchantedlearning.com/subjects/plants/printouts/labelflower.shtml
- 7. http://www.humboldt.edu/~dll2/bot105/root/root.htm
- 8. <u>http://www.ualr.edu/~botany/rootanatomy.html</u>
- 9. http://www.botany.hawaii.edu/faculty/webb/BOT410/Roots/RootBody.htm
- 10. http://bugs.bio.usyd.edu.au/2003A+Pmodules/module4.html
- 11.<u>http://www.ualr.edu/~botany/stemanatomy.html</u>
- 12. http://www.ualr.edu/~botany/leafanatomy.html
- 13. http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/F/Flowering.html
- 14. http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/G/Germination.html
- 15. http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/T/Tropisms.html#The_Mechanism_of_Phototropis m
- 16. http://www.geocites.com/pcelarska_radionica/medonosno_bilje.html
- 17. http://hirc.botanic.hr/vrt/home.htm

Subject holder: Siniša Srečec, Ph. D., college professor

VGUK VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
18ED GAR	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Professional study programme	SUBJECT FOUNDATION		Semester: II
Teachers and associates:		Marijana Vrbančić, mag. ing. agr., senior lecturer Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		30	

SUBJECT OBJECTIVE: enable the students to classify domestic animals according to species and production types, evaluate their exterior, as well as general and special characteristics for selection, and through data entered in register book administer selection procedure.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
Explain the importance of agriculture and livestock production			
Name domestic animals by species, their progenitors, breeds and production types			
Apply basic statistical methods in the description of variability and connection of quantitative properties			
Describe the basic criteria for evaluating the exterior of animals; temperament and temperament, condition			
and constitution, maturity and fertility, productive and working capacity			
Describe animal tagging procedures			
Describe methods of raising domestic animals			
Define basic terms from genetics and breeding of domestic animals			
Describe the selection of domestic animals			
Enter and interpret data in registers			
Describe and apply basic feeds in the feeding of domestic animals			

Literature:

Hrasnica, F., Ogrizek, A. (1961.):	STOČARSTVO - opći dio, Poljoprivredni nakladni zavod u Zagrebu, Zagreb		
Brinzej, M. i sur. (1991.):	STOČARSTVO , Sveučilište u Zagrebu i Sveučilište u Osijeku, Udžbenik za studente poljoprivrednih fakulteta i viših poljoprivrednih škola.		
Uremović, Z i sur. (2002.):	STOČARSTVO , Agronomski fakultet Sveučilišta u Zagrebu		
Jovanovac, Sonja (1997.):	OPĆE STOČARSTVO , Interna skripta za studente poljoprivrednog fakulteta, Osijek		
Jovanovac, Sonja (2014.):	Interna skripta za studente poljoprivrednog fakulteta, Osijek PRINCIPI UZGOJA ŽIVOTINJA Poljoprivredni fakultet Sveučilišta u Osijeku		

Subject holder:

Marijana Vrbančić, mag. ing. agr., senior lecturer



Subject: obligatory		ECTS gradita, 7
Code: 241304	PRINCIPLES OF PLANT PRODUCTION	

Professional study programme	SUBJECT FOUNDATION		Semester: II
Teachers and associates:		Iva Rojnica, mag. ing. agr., lecturer Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		30	

SUBJECT OBJECTIVE: enable the students to use the knowledge on soil and climate in order to define agroecosystem in which agrotechnical measures the students learn about within lectures, exercises and project assignment will contribute to stability of agro-ecosystem and agricultural production.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the students will be able to:			
1. Explain the features of agriculture, especially plant production			
2. Explain the elements of the agrosphere			
3. Assess the agroorganic features of a certain area (agroecosystem)			
4. Explain the concept of yield and the factors that influence it			
5. Describe plant production systems			
6. Describe methods and systems of tillage			
7. Describe methods of fertilizing agricultural crops and types of fertilizers			
8. Interpret biological reproduction, seed quality and sowing rate			
9. Describe the care measures of agricultural crops			

Literature:

a) Obligatory for studying and preparing for exam:

1. Dadaček, Nada (2016): Osnove bilinogojstva. Visoko gospodarsko učilište u Križevcima. Križevci

2. Jug, D., Birkas, M., i Kisić, I. (2015): Obrada tla u agroekološkim okvirima. Sveučilište Josipa Jurja Strossmayera, Poljoprivredni fakultet.

3. Jug, D., Jug, I., Vukadinović, V., Đurđević, B., Stipešević, B., & Brozović, B. (2017): Konzervacijska obrada tla kao mjera ublažavanja klimatskih promjena, Osijek. Hrvatsko društvo za proučavanje obrade tla.

b) <u>Supplementary</u>:

1. Butorac, Anđelko (1999): Opća agronomija. Školska knjiga. Zagreb.

Subject holder:

Iva Rojnica, mag. ing. agr., lecturer

NGUR IBEQ	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 241305	PRINCIPLES OF AGRICULTURAL ECONOMICS	ECTS credits: 5,5
Professional		Somostor: II
study programme		Semester. II

	Dragutin Kamenjak, grad. ing., senior lecturer			
Teachers and associates:	Dušanka Gajdić, univ. spec. oec., senior lecturer			
	Milan Suša, mag. ing. agr., assistant			
	Hours ECTS			
Lectures	45	3		
Exercises and seminars	30	2		
Practical training	8	0,5		
Student workload outside active	77			
classes				
Total student workload	160	5,5		

SUBJECT OBJECTIVE: enable students to acquire basic macroeconomic knowledge related to the functioning of the entire economy of a country, with a special focus on the agriculture and agribusiness sector, as well as basic microeconomic knowledge that is the basis of the operations of all business entities

LEARNING OUTCOMES

LEARNING OUTCOMES
After completed exam the student will be able to:
 Explain basic concepts from the field of macro and micro economics.
Explain the operation of economic laws in production, distribution, exchange and consumption.
3. Explain the economic process, the problem of economic organization, as well as the economic role of
the state.
Differentiate economic systems, peculiarities and basic factors of agricultural production.
5. Assess the importance of certain macroeconomic policy measures on agriculture and agribusiness.
6. Identify the mutual connection between agriculture and other branches of the economy (agribusiness
and beyond).
Distinguish the goals and measures of agricultural policy.
8. Analyze the dynamics of the movement of a phenomenon based on the calculation of relative numbers
of dynamics, relative numbers of coordination and base and chain indices
Describe the basic factors that influence the movement of supply and demand of agricultural goods.
10. Based on the calculation, analyze the price elasticity of supply and the price and income elasticity of
demand.
11. Conceptually determine certain types of costs and their dependence on the degree and changes in
capacity utilization.
12. Use calculations to interpret the importance of cost and income analysis for business operations
13. Compare the appearance of assets and sources of assets of entrepreneurs
14. Describe the basic accounting and financial reports of entrepreneurs.
15. Based on the calculation of the basic performance indicators, evaluate the performance of the
business
16. Based on the calculation of dynamic and static indicators of the profitability of the investment, assess
the economic justification of the investment
17. Apply the acquired knowledge to the independent creation of a research instrument for the needs of an
integrated project assignment

5. Literature:

a) Obligatory for studying and preparing for exam: :

1. Gajdić D. (2021):): Interni materijali (prezentacije) s održanih predavanja i vježbi na predmetu

- 2. Grahovac, Petar (2005): Ekonomika poljoprivrede, Golden marketing, Zagreb
- 3. Grgić I., Franić R., Cerjak M., Mikuš O., Hadelan L., Mesić Ž., Zrakić M., Bokan N. (2017): Priručnik iz agrarne ekonomike, Grafomark d.o.o., Zagreb
- 4. Kamenjak D. (2021): Interni materijali (prezentacije) s održanih predavanja i vježbi na predmetu
- 5. Petrač, B. (2001): Agrarna ekonomika, Ekonomski fakultet u Osijeku, Poljoprivredni fakultet Osijek, Osijek
- 6. Tracy, M. (2000): Hrana i poljoprivreda u tržnom gospodarstvu (uvod u teoriju, praksu i politiku), prijevod T.Žimbrek, MATE, Zagreb

b) Supplementary:

- 1. Cramer, Gail L., Jensen, Clarence W., Southgate, Jr. Douglas D. (2001): Agricultural economics and Agribusiness, 8th Edition, John Wiley & Sons, Inc.
- 2. Kay, Ronald D., Edwards, William M., Duffy, Patricaia A. (2020): Farm management, McGraw-Hill
- 3. Kolega, A., Božić, M. (2001): Hrvatsko poljodjelsko tržište, Tržništvo, Zagreb
- 4. Mankiw, N.G. (2016): Principles of Macroeconomics, 8th Edition, Cengage Learning, Boston
- 5. Mankiw, N.G. (2021): Principles of Microeconomics,9th Edition, Cengage Learning,Boston
- 6. Penson, Jr. John B., Oral Capps, Jr., C. Parr Rosson III, Richard T. Woodward (2018): Introduction to agricultural economics, Pearson, NY
- 7. Samuelson, P.A., Nordhaus, W. (2011): Ekonomija 19. izdanje, MATE, Zagreb

Subject holder: Dragutin Kamenjak, grad. ing., senior lecturer

UGUP TBEO	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 241306	RURAL SOCIOLOGY		ECTS credits: 3,5
Professional study programme	SUBJECT FOUNDATION		Semester: II
Teachers and associates:		Sandra Kantar, Ph. D., college professor	
		Hours	

Lectures	30
Exercises and seminars	15
Practical training	8

SUBJECT OBJECTIVE: To acquaint students with the basic social processes in the village in the past and in the present, with special reference to Croatian rural society, and train them to participate in empirical research.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with the basic social processes in the village in the past and the present, with a special focus on Croatian rural society, and to train them to participate in empirical research. Teaching enables students to acquire basic theoretical knowledge and empirical knowledge for a better interpretation of social changes, the structure and characteristics of rural society.

LEARNING OUTCOMES

LEARNING OUTCOMES		
After completed exam the student will be able to:		
1. Define and describe basic social processes in the village		
2. Recognize basic social changes in the countryside and agriculture		
3. Demonstrate written and oral communication skills in the field of rural sociology		
4. Apply the acquired knowledge to the independent creation of a research instrument for the needs of an		
integrated task		
5. Highlight social changes in the countryside and agriculture, and argue your opinion on socially important		
issues in the countryside.		

Literature:

<u>Obligatory:</u>

- 1. Kantar, S. (2021): Ruralna sociologija (interna skripta) Visoko gospodarsko učilište u Križevcima, Križevci. Dostupno na: <u>https://www.vguk.hr/upload/E_skripte/RUSO_SKRIPTA_2020.pdf</u>
- 2. Rogić, I., Štambuk, M. i Mišetić, A. (2002): Prostor iza: kako modernizacija mijenja hrvatsko selo, Institut društvenih znanosti Ivo Pilar, Zagreb. (Biblioteka Zbornici; knj.17) (poglavlja 3-4)
- 3. Štambuk, M. (2015): Lica nigdinė, Institut društvenih znanosti Ivo Pilar, Žagreb. (Biblioteka za urbane i ruralne studije; knj. 3)
- 4. Šundalić, A. (2010): Selo iz autentičnosti u neprepoznatljivost, Sveučilište Josipa Juraja Strossmayera, Ekonomski fakultet u Osijeku, Osijek. (poglavlja: 1-4)
- 5. Woods, M (2020): Ruralna geografija: procesi, odjeći i iskustva u ruralnom restrukturiranju, Agronomski fakultet Sveučilišta u Zagrebu, Zagreb. (Poglavlja: 2-4).

Supplementary:

- 1. Hodžić, A. (2006): Selo kao izbor? Institut za društvena istraživanja u Zagrebu, Zagreb.
- 2. Mirčetić, Đ. (1998): Agrarna sociologija, vlastita naklada, Vinkovci.
- 3. Puljiz, V. (1977). Eksodus poljoprivrednika. Institut za društvena istraživanja, Zagreb.
- 4. Sociologija sela / Sociologija prostora časopis za istraživanje prostornoga i sociokulturnoga razvoja. Zagreb: IDIS. Odabrani tekstovi uz pojedine nastavne jedinice
- 5. Štambuk, M., Šikić-Mićanović, L. (2014): Ruralna općina: sutra; Društvena re/konstrukcija na ruralnom teritoriju, Zagreb: Institut društvenih znanosti Ivo Pilar (Biblioteka Zbornici; knj. 46)



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239969	FRUIT GROWING		ECTS credits: 5
Professional study			Semester: III
programme			
Teachers and associates:		Dragutin Kamenjak, grad. ing., senior lecturer	
		Iva Šikač, mag. ing. agr., assistant	
		Hours	

Lectures	30
Exercises and seminars	30
Practical training	15

SUBJECT OBJECTIVE: enable participants to independently organise production of fruit at extensive or plantation orchards or to consult producers regarding morphological characteristics and physiological regularities of fruit tree growth.

SUBJECT DESCRIPTION: the subject will enable students to independently organize sustainable fruit production in extensive or intensive plantation orchards, knowing suitable agroorganic conditions, morphological properties of individual fruit species, as well as physiological laws of growth, development and fertility of fruit trees.

LEARNING OUTCOMES

LEARNING OUTCOMES		
After completed exam the student will be able to:		
1. recognize the importance of fruit growing as a branch of agriculture and the peculiarities of modern		
fruit growing		
2. evaluate the environmental conditions of fruit cultivation		
3. evaluate the production position and select varieties, substrates and cultivation systems for growing		
plantations according to the requirements of individual fruit types		
describe methods of fruit propagation and production of fruit seedlings		
5. explain the agrotechnical and auxiliary techniques in the orchard according to individual phenophases		
of growth and development		
6. determine the period and harvesting technique depending on the fruit type and production orientation		
and explain the conditions and methods of fruit storage		
evaluate the economy and profitability of growing a certain fruit species		
8. organize the establishment of orchards and the cultivation of certain species: pome, stone, lupine,		
berry and southern fruit		
9. administer fruit storage		
10. assess cost-efficiency of individual fruit production		

Literature:

- a) Obligatory for studying and preparing for exam:
- 1. Krpina, I. i suradnici (2004): Voćarstvo, Nakladni zavod Globus, Zagreb
- 2. Miljković, I. (1991): Suvremeno voćarstvo, Štamparski zavod Ognjen Prica, Zagreb
- 3. Kamenjak, D. (2019): Voćarstvo, Interni materijali (prezentacije) s održanih predavanja i vježbi na predmetu
- b) <u>Supplementary:</u>
- 1. Miljković, I. (2021): Jabuka, vlastita naklada
- 2. Jackson, D. and all. (2011): Temperate and suptropical Fruit Production, Third edition, Cabi Publishing
- 3. Mandal, D. and all. (2021): Temperate fruits, production, processing, and marketing, Apple Academic Press Inc.
- 4. Jemrić, T. (2007): Cijepljenje i rezidba voćaka, Naklada Uliks d.o.o., Rijeka
- 5. Barta, J. and all. (2006): Handbook of fruits and fruit processing, Blackwell Publishing Professional, Ames, Iowa, USA

- Mark Rieger and all. (2005): Introduction to fruits crops, Food products press
 Westwood, M. N. (2009): Temperate Zone Pomology, 3rd. Portland, Oregon, Timber Press

Subject holder: Dragutin Kamenjak, grad. ing., senior lecturer

VGUR TBEO	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 88988	COSTS AND CALCULATIONS IN PLANT PRODUCTION	ECTS credits: 3
Professional study programme	PLANT PRODUCTION	Semester: III

Teachers and associates:	Lidija Firšt Godek, M. Sc., senior lecturer Milan Suša, mag. ing. agr., assistant
	Hours
Lectures	30
Exercises and seminars	15
Practical training	-

SUBJECT OBJECTIVE: enable students to independently calculate costs in plant production and compose calculation for economic analysis of specific culture.

SUBJECT DESCRIPTION: To acquaint students with the basics of cost theory, types of calculations and profitability of plant production. The costs of plant production will be discussed on the examples of agricultural farms.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Explain the factors of production and fixed and working capital			
2. Define basic terms from the theory of costs			
3. Calculate material costs and depreciation			
4. Show the movement of fixed and variable costs for certain crops			
5. Define basic concepts, principles, types and methods of calculations			
6. Compile the cost price calculation for the economic analysis of a certain culture			
7. Recognize costs and make calculations in plant production			
7. Recognize costs and make calculations in plant production			

Literature:

Obligatory:

- 1. Firšt Godek, L. (2017): Troškovi i kalkulacije u bilinogojstvu, interna skripta za studente Visokog gospodarskog učilišta u Križevcima, Križevci.
- 2. Grgić. Z.. (2012): Management u poljoprivredi, interna skripta za studente Veleučilišta u Kninu, Zagreb.
- 3. Grgić. Z.. (2006.): Troškovi i kalkulacije, Repetitorij za studente Agronomskog fakulteta, Zagreb
- 4. Grupa autora (2013): Katalog kalkulacija poljoprivredne proizvodnje. HZZPSS, Zagreb.
- 5. Karić .M. (2002): Kalkulacije u poljoprivredi. Poljoprivredni fakultet u Osijeku. <u>Supplementary</u>:

Jelavić A., i sur. (1995): Ekonomika poduzeća. Ekonomski fakultet, Zagreb. (odabrana poglavlja)

Subject holder: Lidija Firšt Godek, M. Sc., senior lecturer

VGUR TBBD	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239970	PLANT NUTRITION		ECTS credits: 5,7
Professional study programme	PLANT PRODUCTION		Semester: III
Teachers and associates:		Ivka Kvaternjak, Ph. D., college pr	ofessor

	Hours
Lectures	45
Exercises and seminars	30
Practical training	11

SUBJECT OBJECTIVE: Introduce the students with relations and principles of plant nutrition, plant nutrients and connect basic knowledge on methods of using nutrients from mineral and organic fertilizers and soil as substrate of plant nutrition along with the needs of individual plant species / cultivars.

SUBJECT DESCRIPTION: The goal of the subject is to enable the students to be able to plan the proper fertilization of plant crops in direct production, using the acquired knowledge of plant nutrition, to achieve satisfactory yields, with optimal utilization of the potential of plant fertility and soil fertility, to maximally preserve natural resources, healthy water, ecosystem biodiversity and fertility and productivity of land areas. The treated areas include biogenic elements, their division according to the quantities required for the plant and physiological functions. Soil fertility is discussed with an emphasis on features important for plant nutrition. The first part of the subject covers the forms of nutrients in the soil, their availability and their reception and distribution in the plant. The second part deals with macronutrients, their content, physiological role and disorders due to improper nutrition. The third part of the subject includes microelements, their content, role in the plant, and visual symptoms and disorders due to improper nutrition. Organic and mineral fertilizers are processed. The exercises include control of soil fertility, independent performance of basic chemical analyzes of one's own soil sample, interpretation of results and fertilization planning. As part of professional practice, analyzes are carried out in the laboratory and a report is drawn up.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Classify plant nutrients according to their significance for plants and physiological functions

2. Explain the reception of plant nutrients and their forms and dynamics in the soil

3. Differentiate soil according to fertility and features important for plant nutrition

4. Explain the role of certain essential macro and micronutrients and the effect of toxic elements

- 5. Distinguish the symptoms of excess and deficiency of certain essential macro and micronutrients
- 6. Describe the types of fertilizers with regard to their origin and purpose

7. Describe soil fertility control

8. Independently carry out basic chemical analyzes of the soil

9. Interpret the results of analyzes and write a report

Literature:

a) <u>Obligatory:</u>

Škvorc, Ž., Čosić, T., Sever, K. (2014): Ishrana bilja, interna skripta. Šumarski fakultet, Sveučilište u Zagrebu, Vukadinović, V. i Vukadinović, V. (2011): Ishrana bilja, Poljoprivredni fakultet u Osijeku.

Vukadinović, V. i Lončarić, Z. (2000): Ishrana bilja, knjiga i skripta-dostupna i na internetu, Poljoprivredni fakultet u Osijeku.

Herak-Čustić, M: Ishrana bilja, interna skripta, Agronomski fakultet Zagreb.

Poljak, M. (2002): Fiziologija bilja, interna skripta, Agronomski fakultet u Zagrebu.

b) Supplementary:

Lončarić, Z. i Karalić, K. (2015): Mineralna gnojiva i gnojidba ratarskih usjeva. Poljoprivredni fakultet u Osijeku. Vukadinović, V., Bertć. B. (2013): Filozofija gnojidbe. Poljoprivredni fakultet u Osijeku.

Subject holder: Ivka Kvaternjak, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239971	PRINCIPLES OF PLANT PROTECTION		ECTS credits: 5
Professional study programme	PLANT PRODUCTION		Semester: III
Teachers and associates:		Marijana Ivanek-Martinčić, Ph. D., college professor Martin Bužić, mag. ing. agr.	
		Hours	

Lectures	30
Exercises and seminars	30
Practical training	15

SUBJECT OBJECTIVE: introduce the students with the most important characteristics of harmful organisms in agricultural production (pests, disease and weeds) and with methods and systems of plant protection from harmful organisms.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with the most important features of harmful organisms in crop production (pests, diseases and weeds) and with methods and systems for protecting plants from harmful organisms. Through lectures, exercises, discussions and their own presentations, students learn about the morphology, anatomy, biology, systematics and ecology of insects and the main features of other groups of harmful and useful animals important in plant production, they learn about the development cycles of plant diseases (pathogenesis), the causative agents of plant diseases diseases, their structure, biology and ecology and about the main features and types of weeds in plant production. The subject also gives insight into the choice of different plant protection measures with special emphasis on problems related to the application of chemical measures. In the description of the plant protection system, the principles of integrated plant protection are elaborated in more detail. Students upgrade their acquired knowledge through professional practice within the subject.

LEARNING OUTCOMES

LEARNING OUTCOMES		
After completed exam the student will be able to:		
1. Explain the role of plant protection in plant production		
2. Describe the morphology, anatomy, biology, systematics and ecology of insects and the main features of		
mites, nematodes, snails, rodents and birds important in plant production		
3. Explain the development of plant diseases, the influence of external conditions, the way they spread		
4. Describe the main features of plant disease agents		
5. Recognize and name the most important weeds in plant production		
6. Describe the measures and systems of plant protection, especially the system of integrated protection and		
integrated production of plants		
7. Identify the shortcomings of the application of chemical agents for plant protection		
8. Describe the main features of certain groups of pesticides		
9. Describe the methods of forecasting and assessing the occurrence of harmful organisms		

Literature:

<u>a) Obligatory for studying and preparing for exam:</u> Maceljski, M., (1999 ili 2002): Poljoprivredna entomologija, Zrinski Čakovec. Oštrec, L. & Gotlin Čuljak, T. (2005) Opća entomologija. Čakovec. Zrinski. Gotlin Čuljak, T. & Juran, I. (2016) *Poljoprivredna entomologija - Sistematika kukaca*. Zagreb, Radin. Kišpatić, J.(1985): Opća fitopatologija, Zagreb. Hulina, Nada (1998): Korovi, Zagreb.

b) <u>Supplementary:</u>

Agrios, G. N. (2005): Plant Pathology, Elsevier Academic press

Oštrec, Lj. (1998): Zoologija, štetne i korisne životinje u poljoprivredi, Zrinski Čakovec.

Igrc Barčić, J., Maceljski, M.(2001): Ekološki prihvatljiva zaštita bilja od štetnika, Zrinski Čakovec

Glasilo biljne zaštite s popisom sredstava za zaštitu bilja, časopis Hrvatskog društva biljne zaštite (izlazi svake godine)

Glasilo biljne zaštite br. 5, 2014. – tema broja: Integrirana zaštita <u>https://hrcak.srce.hr/broj/13638</u> Barić, B. i Pajač Živković, I. (2020) *Načela integrirane zaštite bilja*. Zagreb, Sveučilište u Zagrebu, Agronomski fakultet, Zagreb, Hrvatska.

<u>c) Useful links</u>

http://bugs.bio.usyd.edu.au/learning/resources/Entomology/externalMorphology/extMorphology.html http://www.earthlife.net/insects/anatomy.html http://www.apsnet.org/edcenter/intropp/pathogengroups/pages/introfungi.aspx http://www.britannica.com/science/plant-disease http://www.ipm.ucdavis.edu/PMG/weeds_intro.html

> Subject holder: Marijana Ivanek-Martinčić, Ph. D., college professor

NGUR TBBQ	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory	MECHANISATION IN PLANT PRODUCTION	ECTS credits: 7,3	
Code: 239972			
Professional study programme	PLANT PRODUCTION		Semester: III
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Teachers and associates:		Vlado Kušec., M. Sc., senior lecturer	
		Hours	
Lectures		45	
Exercises and seminars		45	
Practical training		20	

SUBJECT OBJECTIVE: enable students to be able to explain the specifics and importance of mechanization in the field of agricultural and vegetable production, explain the principle of operation, construction, rational application from the aspect of energy consumption and environmental impact.

SUBJECT DESCRIPTION: enable students to be able to explain the specifics and importance of mechanization in the field of agricultural and vegetable production, explain the principle of operation, construction, rational application from the aspect of energy consumption and environmental impact.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain the significance and specifics of machines and devices in agricultural and vegetable production

2. Describe the construction and principle of operation of machines and devices in agricultural and vegetable production

3. Assess the suitability of different machines and devices in certain areas of agricultural and vegetable production

4. Plan the necessary capacities and structure of machines and devices in agricultural and vegetable production

5. Assess the impact of individual machines and devices on the environment

Literature:

a) Obligatory for studying and preparing for exam:

- 1. Zimmer R., Banaj D., Brkić D., Košutić S. (1997): Mehanizacija u ratarstvu, Osijek
- 2. Zimmer R., Košutić S., Zimmer R. (2010): Mehanizacija u ratarstvu, Osijek
- 3. Kušec V., Sito S. (2014): Uređaji i oprema za navodnjavanje, Križevci
- 4. Kušec V., Sito S. (2019): Strojevi i oruđa za kultiviranje i obradu tla, Križevci

b) Supplementary:

- 1. dlg-test.de, Das Net Magazin Für Landtehnick
- 2. Aktualni zadaci mehanizacije poljoprivrede, Zbornik radova.

Subject holder: Vlado Kušec., M. Sc., senior lecturer

VGUK X++	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239973	GRAIN LEGUMES		ECTS credits: 3,5
Professional study programme	PLANT PRODUCTION		Semester: IV
Teachers and associates:		Renata Erhatić, Ph. D., senior lecturer Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		30	
Exercises and seminars		15	
Practical training		8	

SUBJECT OBJECTIVE: train students for independent production of grain legumes

SUBJECT DESCRIPTION: The aim of the subject is to train students for the independent production of grain legumes. As part of the performance program of the subject, the most important grain legumes will be processed. Their economic importance, morphological and biological properties, origin, distribution, botanical systematics, agroorganic conditions for production and production technology will be described.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Explain the importance of the production of grain legumes for food and crop rotation			
2. Describe the stages of growth and development and the morphological and biological properties of certain			
grain legumes			
3. Assess the possibility of growing certain grain legumes with regard to agroorganic conditions			
4. Choose the agrotechnics for the production of certain grain legumes related to yield and quality			
5. To analyze the correctness of the production of grain legumes on the selected farm			
Literature:			

Obligatory for studying and preparing for exam:

Gagro M. (1998). Žitarice i zrnate mahunarke. Hrvatsko agronomsko društvo, Zagreb Vratarić M., Sudarić A. (2008). Soja. Poljoprivredni institut Osijek Pospišil A., Pospišil M. (2013). Ratarstvo praktikum, Sveučilište u Zagrebu, Agronomski fakultet

Supplementary:

Grupa autora. (1986). Posebno ratarstvo I, Nučna knjiga Beograd. Časdopisi: Agronomski glasnik, Poljoprivreda, Zbornici radova sa znanstvenih skupova Lešić R., Borošić J., Ćustić M., Poljak M., Romić D. (2002). Povrćarstvo. Zrinski, Čakovec

> Subject holder: Renata Erhatić, Ph. D., senior lecturer

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Subject syllabus

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April 2017 Code: Annex 5/SOUK/A 4.3.1.

Edition:

Subject: obligatory Code: 239974	INDUSTRIAL CROP PRODUCTION		ECTS credits: 6
Professional study programme	PLANT PRODUCTION		Semester: IV
Teachers and associates:		Zvjezdana Augustinović, Ph. D., college professor Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students for independent production of industrial crops at agricultural farm.

SUBJECT DESCRIPTION: The aim of the subject is to train students for the independent production of industrial plants on an agricultural farm. The subject program Cultivation of industrial plants through lectures, exercises, seminars and an integrated project assignment enables students to acquire fundamental theoretical and practical knowledge in the production of the main industrial crops. For each culture, the importance and use, production and areas, distribution, morphological and biological properties, requirements according to organic conditions and production technology are discussed.

LEARNING OUTCOMES

LEARNING OUTCOMES		
After completed exam the student will be able to:		
Describe the main morphological and biological characteristics of industrial cultures		
Recognize the stages of growth and development of industrial cultures		
Assess the agronomic properties of individual varieties and hybrids of industrial crops and select and		
recommend for cultivation crops and varieties/hybrids that correspond to specific agroorganic conditions		
Explain the technology of production of industrial crops and propose appropriate agrotechnical measures		
Plan and calculate the basic parameters (amount of fertilizers, seeds, etc.) for the production of industrial		
crops		
Describe and explain the production of industrial crops as raw material for biofuel production		

Literature:

- a) Obligatory for studying and preparing for exam:
- 1. Augustinović, Zvjezdana (2016) : Uzgoj industrijskog bilja, Visoko gospodarsko učilište u Križevcima
- 2. Pospišil, Milan (2013.): Ratarstvo, II. dio industrijsko bilje
- 3. Gagro, M., (1998): Industrijsko i krmno bilje, Hrvatsko agronomsko društvo, Zagreb.

b) Supplementary:

- 4. Butorac, Jasminka (2009.): Predivo bilje, Kruger d.o.o., Zagreb
- 5. Butorac, Jasminka (2009.): Duhan, Kruger d.o.o., Zagreb
- 6. Vratarić Marija, i sur. (2004): Suncokret (Helianthus annuus), monografija, Poljoprivredni institut Osijek
- 7. Hawks, S.N., Collins W.K. (1994): Načela proizvodnje virginijskog duhana, Ceres, Zagreb
- 8. Vaughan, John Griffith (1997): The new Oxford book of food plants, Oxford, Oxford University Press

Subject holder: Zvjezdana Augustinović, Ph. D., college professor



 KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES
 Edition:
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 Subject syllabus
 Code:
Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239977	CEREALS		ECTS credits: 4,8
Professional study programme	PLANT PRODUCTION		Semester: IV
Teachers and associates:		Renata Erhatić, Ph. D., college professor Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		12	

SUBJECT OBJECTIVE: train students for independent production of cereals and pseudocereals

SUBJECT DESCRIPTION: the aim of the subject is to train students for independent production of cereals and pseudocereals. As part of the performance program of the subject, the most important small, millet and alternative cereals will be processed. Their economic importance, morphological and biological properties, origin, distribution, botanical systematics, agroorganic conditions for production and production technology will be described.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
Explain the importance and use of cereals and pseudocereals			
Recognize the stages of growth and development of cereals and pseudocereals			
Describe the morphological and biological properties of cereals and pseudocereals			
Assess the possibility of growing certain cereals and pseudocereals in relation to agroorganic conditions			
Choose agrotechnics for the production of cereals and pseudocereals, related to yield and quality			
Analyze the correctness of the production of the selected cereal or pseudocereal on the selected farm			
Explain the importance and use of cereals and pseudocereals			

Literature:

a) <u>Obligatory for studying and preparing for exam:</u>
 Gagro M. 1998. Žitarice i zrnate mahunarke. Hrvatsko agronomsko društvo, Zagreb
 Kovačević V., Rastija M. (2014). Žitarice. Poljoprivredni fakultet u Osijeku
 Gadžo D., Đikić M., Jovović Z., Mijić A. (2017). Alternativni ratarski usjevi. Univerzitet u Sarajevu,
 Poljoprivredno –prehrambeni fakultet
 Pospišil A., Pospišil M. (2013). Ratarstvo praktikum, Sveučilište u Zagrebu, Agronomski fakultet

b) <u>Supplementary:</u>

Jošt M. i suradnici. 1988. Pšenica - Put do visokih prinosa. Polj. institut Križevci Tajnšek T. 1991. Koruza. Kmečki glas Ljubljana Grupa autora. 1986. Posebno ratarstvo I, Naučna knjiga Beograd. Henry R.J. and P.S. Kettlewell. 1996. Cereal grain quality.Chapman & Hill Časopisi: Agronomski glasnik, Poljoprivreda, Zbornici radova sa skupova.

Subject holder: Renata Erhatić, Ph. D., college professor



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Subject syllabus

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Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239980	VEGETABLE PRODUCTION		ECTS credits: 7,2
Professional study programme	PLANT PRODUCTION		Semester: IV
Teachers and associates:		Tomislava Peremin Volf, M. Sc., senior lecturer Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		45	
Exercises and seminars		45	
Practical training		18	

SUBJECT OBJECTIVE: enable the students for independent production of vegetables in open areas for certain use (fresh or intended for processing).

SUBJECT DESCRIPTION: The aim of the subject "Growing vegetables" is to train students for the independent production of vegetables outdoors for a specific purpose (fresh market or processing). Through the subject, students acquire the basic theoretical and practical knowledge necessary for successful outdoor vegetable production. The general part deals with the importance of vegetables in human nutrition, the basic features of vegetable growing as an economic branch, and the conditions for establishing vegetable production. Students will also learn about vegetable crops and their systematics, vegetable crop seeds, vegetable crop assortment, protected areas in vegetable growing and growing seedlings. In the special section for the most important vegetable species from the families: Alliaceae, Brassicaceae, Solanaceae, Cucurbitaceae, Asteraceae, Apiaceae, Fabaceae, Asteraceae and Chenopodiaceae, morphological and biological properties, soil requirements and crop rotation, variety selection, determining the required amount of seeds and fertilizers are discussed. soil cultivation and fertilization, growing seedlings, sowing and planting techniques, care measures during the growing season, and harvesting and storage.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to:		
Explain the features of vegetable production		
Recognize and name the main vegetable crops in the stage of technological ripening and their seeds		
Explain the advantages and disadvantages of different ways of growing vegetable seedlings		
Calculate the required amount of seeds and/or seedlings and the required amount of fertilizer for the production of the selected vegetable crop		
Describe the most important morphological and biological properties of vegetable crops and growing conditions		
Choose a variety or hybrid for a specific purpose, area and growing dates		
Independently organize the production of the selected vegetable crop		

Literature:

Obligatory for studying and preparing for exam:

1. Lešić Ružica i sur. (2004): Povrćarstvo. Zrinski d. d., Čakovec

2. Matotan, Z.(2004): Suvremena proizvodnja povrća, Nakladni zavod Globus, Zagreb

3. Parađiković, Nada (2009): Opće i specijalno povrćarstvo, Poljoprivredni fakultet u Osijeku, Osijek <u>Supplementary:</u>

1. Dadaček, Nada, Peremin Volf, Tomislava (2008): Agroklimatologija, Visoko gospodarsko učilište u Križevcima, Križevci

2. Rubatzky, V., Yamaguchi, E.(1996): World vegetables, Champam&Hall, New York.

Subject holder: Tomislava Peremin Volf, M. Sc., senior lecturer

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition:
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ousjool ojnasao	Annex 5/SOUK/A 4.3.1.
	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Subject: obligatory Code: 239985	INTEGRATED PROTECTION OF FIELD CROPS AND VEGETABLES		ECTS credits: 4,5	
Professional study programme	PLANT PRODUCTION		Semester: IV	
Teachers and associates:		Marijana Ivanek-Martinčić, Ph. D.,	D., college professor	
		Hours		
Lectures		30		
Exercises and seminars		30		
Practical training		8		

SUBJECT OBJECTIVE: to acquaint students with the most important harmful organisms in the cultivation of certain agricultural and vegetable crops, their appearance, symptoms, damage, biology and conditions for development and protection measures. The aim of the subject is also to train students to select measures and organize the protection of individual agricultural and vegetable crops according to the principles of integrated protection. Through lectures, discussions and exercises, students will learn about integrated protection measures for the most important harmful organisms of certain agricultural and vegetable crops. Students are encouraged to connect knowledge of the biology and ecology of harmful organisms with appropriate methods of protection. Through professional practice and an integrated project assignment, they upgrade their acquired knowledge.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with the most important harmful organisms in the cultivation of certain agricultural and vegetable crops, their appearance, symptoms, damage, biology and conditions for development and protection measures. Train students to select protection measures for individual agricultural and vegetable crops based on the principles of integrated protection. Through lectures, discussions and exercises, students will learn about integrated protection measures for the most important harmful organisms of certain agricultural and vegetable crops. Students are encouraged to connect knowledge of the biology and ecology of harmful organisms with appropriate methods of protection. Through professional practice and an integrated project assignment, students upgrade their acquired knowledge. **LEARNING OUTCOMES**

LEARNING OUTCOMES

After completed exam the student will be able to:

1. name the harmful organisms of certain agricultural and vegetable crops

2. describe the biology, ecology and damage caused by certain diseases and pests

3. recognize the symptoms of the most important diseases and pests in agricultural and vegetable crops

4. identify weeds in field and vegetable crops

5. propose appropriate protection measures within the framework of integrated protection

6. evaluate the success of implemented protection measures and propose improvements

Literature:

a) <u>Obligatory for studying and preparing for exam:</u>

- 1. Maceljski, M., (1999 ili 2002): Poljoprivredna entomologija, Zrinski, Čakovec
- 2. Maceljski, M. i sur. (2004): Štetočinje povrća, Zrinski, Čakovec
- 3. Glasilo biljne zaštite 3. 2022. Zaštita strnih žitarica https://hrcak.srce.hr/broj/21753

- 4. Glasilo biljne zaštite 5. 2007. Zaštita kukuruza
- 5. Glasnik zaštite bilja 5. 1998, broj posvećen zaštiti industrijskog bilja od bolesti i korova
- 6. Glasilo biljne zaštite 4. 2013. Zaštita krumpira https://hrcak.srce.hr/broj/13638
- 7. Glasilo biljne zaštite 5. 2008. Zaštita uljane repice
- 8. Glasilo biljne zaštite 3. 2010. –Zaštita šećerne repe
- 9. Glasilo biljne zaštite 5. 2016. Zaštita rajčice <u>https://hrcak.srce.hr/broj/13665</u>
- 10. Glasilo biljne zaštite 3. 2019. Zaštita tikvenjača https://hrcak.srce.hr/broj/18872

b) Supplementary:

1. Igrc Barčić, J., Maceljski, M.(2001): Ekološki prihvatljiva zaštita bilja od štetnika, Zrinski Čakovec

2. MPRRR (2014): Tehnološke upute za integriranu proizvodnju ratarskih kultura

http://www.mps.hr/UserDocsImages/INTEGRIRANA/Tehnolo%C5%A1ke%20upute%20zaintegriranu%20proizvo dnju%20ratarskih%20kultura.pdf

3. MPRRR (2014): Tehnološke upute za integriranu proizvodnju povrća

http://www.mps.hr/UserDocsImages/INTEGRIRANA/Tehnolo%C5%A1ke%20upute%20za%20integriranu%20proi zvodnju%20povr%C4%87a.pdf

> Subject holder: Marijana Ivanek-Martinčić, Ph. D., college professor



Subject: obligatory Code: 239988	VITICULTURE AND WINE PRODUCTION		ECTS credits: 6
Professional study programme	PLANT PRODUCTION		Semester: V
Teachers and associates:		Dragutin Kamenjak, grad. ing., senior lecturer Iva Šikač, mag. ing. agr., assistant	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students to independently organise production of grapes in vineyards by means of comprehension of morphological characteristics and physiological regularities of growth and yield of grape-vine, as well as production of various wine styles in wine-cellars and knowledge of all technological processes along with skills to provide consultation to wine producers.

SUBJECT DESCRIPTION: enable students to independently organize sustainable grape production, knowing the agroorganic requirements, morphological properties and physiological laws of growth, development and fertility of the vine, as well as the production of different styles of wine in wineries, knowing the technological processes during production.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Evaluate the environmental conditions for growing vines			
2. Explain the suitability of substrates and varieties for growing vineyards depending on regions and			
production zones			
3. Organize the planting of new vineyards			
4. Organize agrotechnical and ampelotechnical operations in the vineyard according to the stages of the			
annual biological cycle of the grapevine			
5. Analyze the basic ingredients of grapes and, according to them, determine the harvest date depending on			
the orientation of wine production			
6. Explain the purpose of cellar spaces, vessels, equipment and devices used in the winery			
7. Explain the process of grape processing and wine production			
8. Classify the basic types of wine			
9. Independently analyze the basic ingredients of wine			
10. Explain the processes of maturation, storage, stabilization and bottling of wine			
11. Enumerate the current legislation for placing grapes and wine on the market			

Literature:

a) Obligatory for studying and preparing for exam:

- 1. Mirošević, N., Karoglan Kontić, J. (2008): Vinogradarstvo, Globus, Zagreb
- 2. Maletić, E., Karoglan Kontić, J., Pejić, I.(2008): Vinova loza, Školska knjiga, Zagreb
- 3. Herjavec, S. (2019): Vinarstvo, Nakladni zavod Globus, Zagreb
- 4. Kamenjak, D. (2019): Vinogradarstvo i vinarstvo, Interni materijali (prezentacije) s održanih

predavanja i vježbi na predmetu

5. Propisi, Zakon i Pravilnici – Centar za vinogradarstvo, vinarstvo i uljarstvo https://www.hapih.hr/cvvu/propisi/

b) <u>Supplementary:</u>

- 1.) Jackson, R.S. (2019): Wine Science: Principles and Applications, Academic Press, 5th edition, London
- 2.) Ribéreau-Gayon, P. and all. (2006): Volume 1, The Handbook of Enology: Microbiology of Wine, John Wiley & Sons,
- 3.) Ribéreau-Gayon, P. and all. (2006): Volume 2, The Chemistry of Wine Stabilisation and Treatments, John Wiley & Sons,
- 4.) Morata, A. (2019): Red wine technology, Academic Press Elsevier Inc.
- 5.) Vogt, E., Schruft, G. (2000): Weinbau, Ulmer Eugen Verlag
- 6.) Goldammer, T. (2018): Grape Grower's Handbook, A Guide To Viticulture for Wine Production, Apex Publishers

Subject holder: Dragutin Kamenjak, grad. ing., senior lecturer



Subject: obligatory Code: 239992	STORAGE AND QUALITY MANAGEMENT OF AGRICULTURAL PRODUCTS		ECTS credits: 5,6
Professional study programme	PLANT PRODUCTION		Semester: V
Teachers and associates:		Siniša Srečec, Ph. D., college professor Matea Habuš, Ph.D., lecturer	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		9	

SUBJECT OBJECTIVE: enable the students for organisation and administration of storage of agricultural products in order to ensure their quality and traceability in agricultural, food processing and distribution chain.

SUBJECT DESCRIPTION: The subject is taken in the 5th semester, and the proposed content builds on all the subjects that the students took and passed during their studies.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Assess the quality of the agricultural product according to the results of the analyses.			
2. Assess the risks and their level that will appear during storage.			
3. Determine the adequate treatment of the agricultural product before its storage.			
4. Determine the measures for monitoring the agricultural product during storage.			
5. Determine the implementation of intervention measures in the case of self-heating of granular agricultural			
products.			
6. Calculate the necessary storage space for receiving a certain amount of agricultural product.			
7. Plan an adequate technological organization in the season of reception (processing, drying, cooling) of			
agricultural products.			
8. Anticipate occupational safety measures during processing and storage (elevation, internal transport,			
fumigation and cooling of all granular, tuberous and fresh) agricultural products.			
9. Define the sources of physical, chemical and biological hazards in the agricultural production chain.			
10. Determine control and critical control points in the agricultural production chain.			
11. Determine traceability in the agricultural production, distribution and technological chain.			

Literature:

<u>Obligatory:</u>

- 1. **Ritz** J., (1997.): Uskladištavanje ratarskih proizvoda I svezak (sveučilišni udžbenik). Prehrmabeno biotehnološki inženjering, Zagreb
- 2. **Ritz** J., (1997.): Uskladištavanje ratarskih proizvoda II svezak (sveučilišni udžbenik). Prehrmabeno biotehnološki inženjering, Zagreb
- Ritz J., (1988.): Osnovi uskladištenja ratarskih proizvoda (sveučilišni udžbenik). Sveučilišna naklada Liber, Zagreb
- 4. **Ritz** J., (1989.): Uskladištenje krumpira. Fakultet poljoprivrednih znanosti, Zagreb

Supplementary:

- 1. Srečec, S., Štefanec, J., Pleadin, J., Bauman, I. (2013): Decreasing deoxynivalenol concentration in maize within the production chain of animal feed. Agro Food Industry Hi-Tech 24(1): 62-64.
- Rukavina, D., Tutavac, J. Bauman, I., Srečec, S. (2012): Food safety and quality management in agrofood production chain – situation in Croatia. 47th Croatian and 7th International Symposium on Agriculture. Opatija. Croatia 13th – 17th February 2012. Proceedings (141-149).
- 3. Anon. (2001): Grain Sampling Procedure. United States Department of Agriculture Grain Inspection, Packers and Stockyards Administration, Technical Division Services, Kanzas City.
- 4. Anon. (1995): Grain Inspection Handbook Book I. United States Department of Agriculture, Federal Grain Inspection Service, Washington D.C.
- 5. **Bomford**, P.H. & A. Langleym (2003): Grain preservation and storage, p.231-246. In book: The Agricultural Notebook, 20th edition. Editor: Soffe, R.J., Blackwell Science, reprinted 2006; 744 p.
- Knurra, S., S. Gymnich, E. Rembialkowska and B. Petersen (2006): Agri-food production chain, p. 19-65. In book: Safety in the agri-food chain. Editors: Luning, P.A., F. Devlieghere and R. Verhé, Wageningen Academic Publishers, reprinted 2007; 684 p.
- 7. **Rath** F. (2001): Malting Characteristics of the new European Spring Variety Prestige. Research Institute for Raw Materials VLB Berlin
- 8. **Ujević** A. (1988.): Tehnologija dorade i čuvanja sjemena (Sveučilišni udžbenik), Fakultet poljoprivrednih znanosti, Zagreb
- 9. Anon. (1993): Council Directice 93/94 EEC of June 1993 on the Hygiene of Foodstufs. Official Journal of the European Communities, June 1993.
- 10. Anon. (1992): HACCP: A Practical Guide, Technical Manual, No: 38. Food and Drink Research Association.
- 11. Anon. (1992): Grain Bins. AgriAction Information Sheet (IS-98-09).

Useful links:

- 1. <u>http://ww1.agric.gov.ab.ca</u>
- 2. <u>http://www.ext.nodac.edu</u>
- 3. <u>http://www.kmberly.uidaho.edu</u>
- 4. <u>http://www.fao.org</u>

Subject holder: Siniša Srečec, Ph. D., college professor



Subject: obligatory Code: 239995	SEED PRODUCTION AND SEED CONDITIONING		ECTS credits: 4,4
Professional study programme	PLANT PRODUCTION		Semester: V
Teachers and associates:		Dijana Horvat, Ph. D., senior lecturer Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		30	
Exercises and seminars		15	
Practical training		21	

SUBJECT OBJECTIVE: introduce the students with the basic principles of seed production and processing of various cultures.

SUBJECT DESCRIPTION: During lectures, students will be introduced to the basics of legislation in seed production, the production and processing of seeds of arable, fodder and vegetable crops and oilseeds. Through exercises carried out in the Laboratory for Quality Control of Agricultural Reproductive Material, they will get to know the methods of testing the quality of seeds, and conduct tests independently. Practical classes are organized in the collection field and in seed processing, and students can follow the cultivation, processing, drying and cleaning of seeds on concrete examples and participate in all stages of seed crop production.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Describe the importance of seed production

2. Define the properties of seeds

3. Differentiate between seed samples according to the collection procedure and the method of formation

4. Independently examine the basic properties of seeds according to the prescribed methodology and interpret the results obtained

5. Describe the production, professional supervision and processing of seeds of agricultural plants by groups

6. Plan the production and processing of seeds in accordance with the applicable legal regulations

7. Explain the significance of the National Program for the Conservation of Plant Genetic Resources

Literature:

Obligatory for studying and preparing for exam:

- 1. Guberac V. 2000. Sjemenarstvo ratarskih kultura. Interna skripta. Polj. Fakultet, Osijek
- 2. Lešić R., Pavlek P., Cvjetković B.(1993.) : Proizvodnja povrtnog sjemena, Agronomski fakultet Sveučilišta u
- 3. Kolak I. 1994. Sjemenarstvo ratarskih i krmnih kultura. Globus, Zagreb
- 4. Kolak I. 1997. Pojmovnik sjemenarstva, Hrvatsko agronomsko društvo, Zagreb
- 5. Milošević M. i Kobiljski B. (2011.), Semenarstvo I, Institut za ratarstvo i povrćarstvo, Novi Sad https://www.ifvcns.rs/elektronska biblioteka/knjige/Semenarstvo%20I.pdf
- 6. Milošević M. i Kobiljski (2011), Semenastvo II, Institut za ratarstvo i povrćarstvo, Novi Sad https://www.ifvcns.rs/elektronska_biblioteka/knjige/Semenarstvo%20II.pdf

- 7. Milošević M. i Kobiljski (2011), Semenastvo II, Institut za ratarstvo i povrćarstvo, Novi Sadhttps://www.ifvcns.rs/elektronska_biblioteka/knjige/Semenarstvo%20III.pdf
- 8. Skender A. (1998.). Sjemenje i plodovi poljoprivrednih kultura i korova na području Hrvatske, Osijek
- 9. Ujević, A., Kovačević, J. (1972) : Ispitivanje sjemena, Zavod za ispitivanje sjemena, Zagreb

10. Legal regulations:

- 1. Law on seeds, planting material and recognition of varieties of agricultural plants (110/21) 2. Rulebook on registration in the registers of suppliers, laboratories and samplers of agricultural seeds and planting material (Official Gazette 08/22)
- 12. 3. Rulebook on methods of sampling and seed quality testing (Official Gazette 99/08)

Supplementary:

- 13. Pravilnik o stavljanju na tržište sjemena žitarica (NN 83/09, 31/13, 61/16, 111/18, 47/20)
- 14. Pravilnik o stavljanje na tržite sjemena krmnog bilja (NN 127/09, 78/10, 31/13, 23/17, 112/18, 47/20)
- 15. Pravilnik o stavljanu na tržište sjemenskog krumpira (129/07,103/15)
- 16. Pravilnik o stavljanju na tržište sjemena povrća (129/07, 78/10, 43/13,29/14,36/15, 84/16, 55/20)
- 17. Pravilnik o stavljanju na tržište sjemena repa (72/07, 25/17)
- 18. Pravilnik o stavljanju na tržište sjemena uljarica i predivog bilja (126/07, 20/13,123/16, 46/20)
- 19. Pravilnik o stavljanju na tržište sjemena duhana (61/14)
- 20. Pravilnik o stavljanju na tržište sjemena čuvanih sorti (43/13, 40/14)

Subject holder: Dijana Horvat, Ph. D., senior lecturer



Subject: obligatory Code: 192568	OSNOVE GENETIKE I OPLEMENJIVANJA BILJA		ECTS credits: 3
Professional study programme	PLANT PRODUCTION		Semester: V
Teachers and associates:		Dijana Horvat, Ph.D., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: To acquaint students with the basic laws of inheritance and methods of breeding plants with the aim of achieving improved qualitative and quantitative properties of cultivated plants.

SUBJECT DESCRIPTION: Through this subject, students will be introduced to the basic laws of inheritance and breeding methods with the aim of achieving improved qualitative and quantitative properties of cultivated plants.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Describe double fertilization in plants			
2. Explain the structure of nucleic acids and their role in the process of inheritance			
3. Apply the laws of inheritance in solving tasks			
4. Connect gender inheritance and gender-linked traits			
5. Differentiate between mutations according to the cause and changes in the number and structure of chromosomes			
6. Evaluate the positive and negative effects of cloning and genetic engineering			
7. Explain the significance of the application of male sterility, transgression and heterosis in plant breeding			
8. Define types of plant cultivars			
9. Choose a breeding method depending on the reproductive system of the species and the goal of breeding			
10. On the example of one plant species, define all the procedures necessary to enter the variety in the Variety List			

Literature:

<u>Obligatory:</u>

- 1. Beljo J.(2006.) : Oplemenjivanje bilja, Agronomski fakutet Mostar
- 2. Borojević K., Borojević S. (1976.): Genetika, Novi Sad
- 3. Borojević K. (1986.): Geni i populacija. Novi Sad
- 4. Martinčić J. i Kozumplik V. (1996.): Oplemenjivanje bilja, Zagreb
- 5. Pavlica M. (2012.): Mrežni udžbenik genetike PMF http://www.genetika.biol.pmf.unizg.hr/
- 6. Pavlica M. i Balabanić J. (2004.): Genetika i evolucija, Školska knjiga
- 7. Pavlica M. i Balabanić J. (2014.): Genetika i evolucija, Školska knjiga

Supplementary:

- 8. Tamarin R.H. (1999). Principles of genetics, Mc Graw-Hil
- 9. Pravilnik o priznavanju sorti poljoprivrednog bilja (99/08, 100/09, 109/10, 73/13)

10. Pravilnik o protokolima za ispitivanje različitosti, ujednačenosti i postojanosti sorti u svrhu priznavanja (8/22)

Subject holder: Dijana Horvat, Ph.D., senior lecturer



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 239999	Production Organisation in Plant Production		ECTS credits: 3
Professional study programme	PLANT PRODUCTION		Semester: V
Teachers and associates:		Lidija Firšt Godek, M. Sc., senior lecturer Milan Suša, mag. ing. agr., assistant	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		15	

SUBJECT OBJECTIVE: enable the students to choose correct organisational measures for rational administration of tasks in plant production and for efficient farm management

SUBJECT DESCRIPTION: The subject enables the acquisition of basic knowledge and skills for the rational performance of the work process with the aim of profitable plant production. **LEARNING OUTCOMES**

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Explain the basic terms in the field of production organization			
2. Show the basic principles of production organization			
3. Interpret the processes of organization of business functions			
4. Show time consumption by work tasks in plant production			
5. Organize the production process of the selected culture			
6. Independent organization of the production of the selected crop			

Literature:

Obligatory:

- 1. Njavro M., (2009): Uprava poljoprivrednog gospodarstva. Skripta Agronomski fakultet, Zagreb
- 2. Sikavica P., Novak, M., (1999): Poslovna organizacija. III. izdanje, Informator, Zagreb
- 3. Škrtić M., (2006): Poduzetništvo. Sinergija, Zagreb
- 4. Žugaj M., Šehanović J., Cigula M., (2004): Organizacija. Tiva. Varaždin.

Supplementary:

- 1. Daft, R. L.: Organization Theory and Design, 7th edition, South-Western College Publishing, Mason, Ohio, 2001.
- 2. Karoglan P., Tanić S., (1992): Organizacija i ekonomika ratarske proizvodnje. Agronomski fakultet, Zagreb
- 3. Nicholas C.Siropolis (1995): Menadžment malog poduzeća. 4. izdanje Mate d.o.o. Zagreb

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

April 2017

Subject syllabus

Annex 5/SOUK/A 4.3.1.

Code:

Edition:

Subject: obligatory Code: 38856	AGRICULTURAL POLICY		ECTS credits: 2
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: VI
Teachers and associates:		Kristina Svržnjak, Ph. D., college professor	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: Introduce the students with the influence of agricultural policy on development of agriculture and rural development in Croatia.

SUBJECT DESCRIPTION: To acquaint students with the impact of agricultural policy on the development of agriculture and rural development in Croatia.

LEARNING OUTCOMES

Obligatory:

1. Petrač, B., (2002.): Agrarna ekonomika, Ekonomski fakultet u Osijeku i Poljoprivredni fakultet u Osijeku, Osijek (poglavlje agrarna politika)

<u>Supplementary:</u> 2. Publika

2. Publikacije, strategije i poljoprivredno zakonodavstvo s Internet stranica Ministarstva poljoprivrede (www.mps.hr)

Subject holder: Kristina Svržnjak, Ph. D., college professor

Image: Ward of the synthesis of the synthes

Subject: obligatory	PRINCIPLES OF BIOMETRICS AND METHODS OF		ECTS credits: 2
Code: 192570	FINAL THESIS		
Professional study	PLANT PRODUCTION		
programmo	LIVESTOCK RAISING		Semester: VI
programme	MANAGEMENT IN AG	RICULTURE	
Teachers and associates:		Siniša Srečec, Ph. D., college pro	fessor
		Marijana Vrbaničić Igrić, mag. ing. agr., senior lecturer	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: To acquaint students with the basics of biometrics and methods of preparing the final thesis.

SUBJECT DESCRIPTION: The subject is taken in the 6th semester, and the proposed content builds on all the subjects that the students took and passed during their studies. Therefore, the content in its character and significance is not only complementary, but also supplementary, as it represents the final stage of students' training in which they prepare for designing, organizing and conducting experiments in agriculture.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Define total variability, describe all factors in agricultural research that influence the occurrence of variability

2. Establish a null hypothesis before designing an experiment

3. Select all relevant literature sources that deal with the research problem

4. Design and implement an experiment in agriculture

5. Analyze the total variability between and within groups, that is, members of the experiment

6. Calculate the level of significance of the obtained differences between groups or members of the experiment, depending on the effect of a certain factor

7. Determine the interaction, through the strength of the connection (calculate the strength of the correlation) between individual factors

8. Interpret the obtained results of the statistical verification of the justification of the obtained differences9. Prepare final thesis

Literature:

Obligatory:

- 1. Knezović, Z., Mandić, A. i Primorac, J. (2020.) Pokusi u poljoprivredi. (sveučilišni udžbenik) Sveučilište u Mostaru, Mostar.
- 2. Knezović, Z. (2019.) Biometrika. (sveučilišni udžbenik) Sveučilište u Mostaru, Mostar.
- 3. Žugaj, M., Dumičić, K. I Dušak, V. (2006.) Temelji znanstvenoistraživačkog rada. (sveučilišni udžbenik) Fakultet organizacije i informatike, Varaždin.
- 4. Vasilj, Đ. (2000): Biometrika i eksperimentiranje u bilinogojstvu. Hrvatsko agronomsko društvo, Zagreb.

Supplementary:

1. Hill, T. & Lewicki, P. (2007): STATISTICS: Methods and Applications. StatSoft, Tulsa, OK.

- Srečec, S. (1998) Proizvodne osobine kultivara hmelja srednjoeuropske provenijencije (Humulus lupulus, L.) u agroekološkim uvjetima podkalničkog kraja i mogućnosti proizvodnje hmelja u potkalničkom kraju. Sjemenarstvo, 15 (3/4), 169-178.
- 3. Srečec, S., Habijanec, S. & Kaučić, D. (2001): Proizvodna iskustva hmeljara sjeverozapadne Hrvatske u klimatski ekstremno nepovoljnim godinama 1999. i 2000.. Hmeljarski bilten (Hop bulletin), 8 (1), 57-62.
- 4. Srečec, S., Kvaternjak, I., Kaučić, D. & Marić, V. (2004): Rast hmelja i akumulacija alfa kiselina u normalnim i ekstremnim klimatskim prilikama. ACS. Agriculturae conspectus scintificus, 69 (2-3), 56-62.
- 5. Srečec, S., Kvaternjak, I., Kaučić, D., Špoljar, A. & Erhatić, R. (2008): Influence of Climatic Conditions on Accumulation of α -acids in Hop Cones. Agriculturae Conspectus Scientificus, 73 (3), 161-166.
- 6. Srečec, S., Rezić, T., Šantek, B. & Marić, V. (2009): Hop pellets type 90 : Influence of manufacture and storage on losses of α-acids. Acta alimentaria, 38 (1), 141-147. doi:10.1556/AAlim.2008.0014.
- Srečec, S., Zechner-Krpan, V., Marag, S., Špoljarić, I., Kvaternjak, I. & Mršić, G. (2011): Morphogenesis, volume and number of hop (Humulus lupulus L.) glandular trichomes, and their influence on alpha acids accumulation in fresh bracts of hop cones. Acta botanica Croatica, 70 (1), 1-8. doi:10.2478/v10184-010-0017-2.
- Srečec, S., Čeh, B., Savić-Ciler, T. & Ferlež Rus, A. (2013): Empiric mathematical model for predicting the content of alpha-acids in hop (Humulus lupulus L.) cv. Aurora. SpringerPlus, 2 (1), 59-67. doi:10.1186/2193-1801-2-59.
- 9. Štefanec, J., Pleadin, J., Bauman, I. & Srečec, S. (2013): Decreasing deoxynivalenol concentration in maize within the production chain of animal feed. Agro food industry hi-tech, 24 (1), 62-64.
- Mršić, G., Njari, B., Srečec, S., Petek, M., Cvrtila Fleck, Ž., Živković, M., Špiranec, K., Špoljarić, D., Mihelić, D., Kozačinski, L. & Popović, M. (2013): Kemijska ocjena kakvoće pilećeg mesa podrijetlom od tovnih pilića hranjenih uz dodatak pripravka plemenite pečurke Agaricus bisporus. Meso : prvi hrvatski časopis o mesu, 15 (4), 300-306.
- 11. Kozačinski, L., Mršić, G., Srečec, S., Grizelj, J., Vince, S., Špoljarić, B., Pajurin, L., Sigurnjak, J., Siročić, V., Ćuk, A., Cvrtila Fleck, Ž., Živković, M., Špiranec, K., Špoljarić, D., Čop, M., Špoljarić, I., Mihelić, D. & Popović, M. (2014): Kemijska ocjena kakvoće mlijeka podrijetlom od ovaca hranjenih s dodatkom pripravka plemenite pečurke Agaricus bisporus. Veterinarska stanica : znanstveno-stručni veterinarski časopis, 45 (4), 239-248.

Subject holder: Siniša Srečec, Ph. D., college professor



Subject: obligatory Code: 215006	FINAL PRACTICAL TRAINING		ECTS credits: 18
Professional study programme	PLANT PRODUCTION		Semester: VI
Teachers and associates:		Zvjezdana Augustinović, Ph. D., college professor Iva Rojnica, mag. ing. agr., lecturer Mentor of practical training at the University Mentor of practical training outside University	
		Hours	
Lectures		-	
Exercises and seminars		-	
Practical training		420	

SUBJECT OBJECTIVE: apply and extend acquired knowledge and skills in real work environment, register observations and elaborate critical review or administer research for elaboration of final thesis

LEARNING OUTCOMES

LEARNING OUTCOMES
After completed exam the student will be able to:
1. Describe the activity and organizational structure at the place of practice
2. Apply the acquired theoretical knowledge needed at the place of practice
3. Perform specific tasks under supervision or independently
4. Solve a given problem in known circumstances
5. Take a critical look at the tasks performed at the place of practice and, if necessary, suggest improvements
6. Effectively participate in teamwork
7. Make decisions independently
8. Present your own research results in written and oral form.

External evaluation - assessment of student work during professional practice; Report - Evaluation of reports from professional practice; Protecting reports from professional practice

Subject holder: Zvjezdana Augustinović, Ph. D., college professor

IGUP TBEO C	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 38143	ANATOMY AND PHYSIOLOGY OF CATTLE		ECTS credits: 4
Professional study programme	LIVESTOCK RAISING		Semester: III
Teachers and associates:		Tatjana Tušek, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to independently describe and explain morphological characteristics in constitution of individual domestic mammals and poultry within the framework of anatomy. Functioning of organisms, tissues and cells will be defined by students through physiological processing of digestion, metabolism and reproduction of domestic mammals and poultry with specific neuro-hormonal management of all biochemical processes in the organism.

SUBJECT DESCRIPTION: Livestock anatomy and physiology is a compulsory subject for students in the professional study of Agriculture, in the field of study in Zootechnics. Livestock anatomy includes the morphological peculiarities of individual species of domestic animals. By paying special attention to the excellent specificities in the structure of the digestive and reproductive systems, it is possible to better define the functioning of the mentioned systems and applied biochemistry, which is dealt with through the part of the subject called cattle physiology. Physiology includes special physiology that gives insight into events at the cell level (specialization of the cells of the body of a multicellular organism for certain functions, e.g. hormone production, metabolism), physiology of the digestive system with specifics for monogastric and polygastric animals, and physiology of reproduction for diesteric and polyestric animals. In the framework of ecophysiology, the impact of new technologies in livestock keeping and feeding is addressed, which affect the occurrence of stress in conventionally kept domestic animals and evident stress factors that indicate a state of stress and non-specific losses in the herd or reduced productivity of domestic animals.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to:
1. Apply anatomical and topographic terminology to a living animal or teaching prop
2. To identify areas and organic systems and to distinguish specific features in the structure between mammals and poultry
3. Differentiate the life processes and reactions of animals to their environment
4. Distinguish the specificities of ruminant, non-ruminant and poultry digestion
5. Distinguish the specificities of metabolism in ruminants, non-ruminants and poultry
6. To define the laws and physiological specificities of the reproduction of ungulates, ungulates, carnivores and poultry

Literature:

Obligatory for studying and preparing for exam: :

- Babić, K., Melita Herak, Tatjana Tušek (2003): Anatomija i fiziologija domaćih životinja. Visoko gospodarsko učilište Križevci i Zrinski d. d. Čakovec.
- Šjaastad V.Ø., O Sand., K. Hove (2017): Fiziologija domaćih životinja. (Urednici hrvatskog izdanja prof. dr. sc. Suzana Milinković Tur i prof. dr. sc. Miljenko Šimpraga). Naklada Slap. Jastrebarsko.
- Tušek, Tatjana (1996): Praktikum iz anatomije domaćih životinja (lokomotorni sustav) dopunjeno izdanje. Visoko gospodarsko učilište Križevci, Sveučilište u Zagrebu, 1-51.
- Tušek, Tatjana (2000): Fiziologija stoke (praktikum). Visoko gospodarsko učilište Križevci, Križevci, 1-45.
- Anatomija domaćih sisavaca (2008): Urednici njemačkog izdanja: Horst Erich König i Hans-Georg Liebich (treće, prerađeno i prošireno njemačko izdanje). Urednici hrvatskog izdanja: prof. dr. sc. Mladen Zobundžija, prof. dr. sc. Krešimir Babić i prof. dr. sc. Vesna Gjurčević Kantura (prvo hrvatsko izdanje). Udžbenik ii atlas u boji za studente i praktičare. Naklada Slap. Jastrebarsko.

Supplementary:

- Clayton, M. Hilary, Flood F. P. (1996): Colour Atlas of Large Animal Applied Anatomy. M Mosby Wolfe.
- Dyce, K. M., W. O. Sack, C. J. G. Wensing (1987): Textbook of Veterinary Anatomy. W. B. Saunders Company, Philadelphia-Tokyo.
- Guyton, A. C. (1989): Medicinska fiziologija. Medicinska knjiga. Beograd-Zagreb.
- Mc Lelland, J. (1990): A Colour Atlas of Avian Anatomy. Wolfe Publishing Ltd.
- Randall, D. W. Burggren, Kathleen French, R. Fernald (1997): Eckart Animal Physiology. Mechanisms and Adaptations. (Fourth edition). W. H. Freeman and Company, New-York.
- Urednici hrvatskog izdanja: M. Zobundžija, K. Babić, V. Gjurčević-Kantura (2009): Anatomija domaćih sisavaca. Sveučilišni udžbenik i atlas u boji. Naklada Slap, Jastrebarsko.
- Urednici hrvatskog izdanja: S. Milinković-Tur, M. Šimpraga (2017): Fiziologija domaćih životinja.
 Sveučilišni udžbenik. Naklada Slap, Jastrebarsko.
- WEB stranice.

Subject holder: Tatjana Tušek, Ph. D., college professor

VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 240003	CATTLE RAISING		ECTS credits: 5,2
Professional study programme	LIVESTOCK RAISING		Semester: III
Teachers and associates:		Dražen Čuklić, Ph. D., college professor Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		18	

SUBJECT OBJECTIVE: enable the participants to independently organise cattle production or provide consulting services on cattle production and family farms or larger farms.

SUBJECT DESCRIPTION: Cattle production requires systematic education of experts with regard to the acquisition of new knowledge and market needs. During the classes in the Cattle Breeding subject, students will be trained to organize and implement successful cattle production in the new conditions of transition, intensification and open market, and will be able to adapt to the developed cattle production in the EU. **LEARNING OUTCOMES**

LEARNING OUTCOMES

LEARNING OUTCOMES
After completed exam the student will be able to:
1. Describe cattle breeds and their production characteristics
2. Organize efficient cattle meat production
3. Organize efficient cattle milk production
4. Organize efficient combined cattle production
5. Explain cattle evaluation procedures
6. Plan improvements on a cattle farm based on a practical example

Literature:

Obligatory:

- 1. Caput. P. (1996): Govedarstvo, Celeber,Zagreb
- 2. Uremović. Z. (2004) : Govedarstvo, Hrvatska Mljekarska udruga.Zagreb.
- 3. Vujčić.S. (1991) : Pasmine goveda., Prosvjeta , Bjelovar.
- 4. Čuklić. D. (2005): Uzgoj goveda., Skripta I., Visoko gospodarsko učilište u Križevcima.

Supplementary:

- 1. Hrabak.V., Rupić.V. (1980): Praktično govedarstvo., Zagreb.
- 2. Posavi. M. (1996): Linear scoring metoda. Zagreb.
- 3. DLG Futterwerttabellen Wiederkauer,, Frankfurt., DLG- Verlag.1998.
- 4. HAD: Stočarstvo: Časopis za unapređenje stočarstva. Hrvatsko agronomsko društvo,

Subject holder: Dražen Čuklić, Ph. D., college professor

VGUK VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860 aug	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 240006	POULTRY RAISING		ECTS credits: 5,3
Professional study programme	LIVESTOCK RAISING		Semester: III
Teachers and associates:		Marijana Vrbančić Igrić, mag. ing. agr., senior lecturer Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		20	

SUBJECT OBJECTIVE: enable students for independent organisation of production of eggs and poultry meat.

SUBJECT DESCRIPTION: enable students for independent organisation of production of eggs and poultry meat.

LEARNING OUTCOMES

LEARNING OUTCOMES

- After completed exam the student will be able to:
- 1. Describe the breeds and hybrids of all types of poultry and their exterior and production characteristics
- 2. Calculate the composition of feed mixture for layers and broilers
- 3. Apply breeding methods in poultry farming
- 4. Independently carry out the process of incubating chicken eggs
- 5. Compare the ways of keeping poultry
- 6. Apply welfare measures in poultry farming
- 7. Plan preventive health care
- 8. Distinguish the classes and codes of chicken eggs
- 9. To organize the successful production of eggs and poultry meat

10. Describe the feeding of all types of poultry

5. Literature:

a) Obligatory for studying and preparing for exam:

- 1. Pintić V., Marija Meštrović (2004): Osnovi peradarstva. Skripta, II dopunjeno izdanje, Visoko gospodarsko učilište u Križevcima.
- 2. Senčić Đ. (2011): Tehnologija peradarske proizvodnje, Poljoprivredni fakultet u Osijeku, IBL Osijek.
- 3. Vučemilo M. (2008): Higijena i bioekologija u peradarstvu, Veterinarski fakultet Sveučilišta u Zagrebu, Zagreb.
- 4. Senčić Đ. (1994): Peradarstvo, Gospodarski list, Zagreb.
- 5. Uremović Z., et.al. (2002): Stočarstvo, Agronomski fakultet Sveučilišta u Zagrebu.

b) <u>Supplementary:</u>

1. Wilhelm B. (2008.): Hühnerställe bauen. Eugen Ulmer KG, Wollgrasweg 41, 70599 Stuttgart (Hohenheim).

In Krizevci, September 2022

Subject holder: Marijana Vrbančić Igrić, mag. ing. agr., senior lecturer

Subject: obligatory	ECTS gradite: 6.5
Code: 240008	

VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Professional study programme	LIVESTOCK RAISING		Semester: III
Teachers and associates:		Dejan Marenčić, Ph. D.,college professor Goran Mikec, mag. ing. agr., assistant	
		Hours	ECTS
Lectures		45	3
Exercises and seminars		30	2
Practical training		23	1,5
Student workload outside active classes		91	
Total student workload		189	6,5

SUBJECT OBJECTIVE: enable the students to independently evaluate the content of nutrients in fodder and nutritional needs of livestock, as well as to independently make feed rations – fodder mixture for all categories of livestock in line with legal regulations and environment protection.

SUBJECT DESCRIPTION: In intensive livestock production, the most important role among paragenetic factors is the feeding of domestic animals. The production of livestock products is based on the ability of domestic animals to use less significant or almost unusable feed for human consumption and turn it into products of high nutritional value for the population. General nutrition has the task of connecting basic theoretical knowledge about the way to use forage and the nutritional value of individual components of dry matter from the point of view of modern livestock production. In general nutrition, students will learn about the general chemical composition of feed (water and dry matter, crude proteins, crude fats (ether extracts), crude carbohydrates, minerals), the basic principles of the supply of nutrients and active substances (supply of energy, proteins, vitamins and minerals), nutrient requirements (maintenance, productive and product unit requirements), feed digestibility (in vivo, in vitro, feed digestibility factors), feed balances (nitrogen, carbon, energy, mineral balances), principles of animal feeding in individual periods of development and production (growth-growth, pregnancy-pregnancy, lactation, sport-work), fodder in livestock feeding (bulky, concentrated), feed additives (basic additives and other permitted additives with regard to the rulebook on the quality of animal feed), fodder mixtures (complete, supplementary, premixes, basic requirements that must be met when making fodder mixtures, technological procedure of production of fodder mixtures). In applied nutrition, students will learn to assess the nutritional needs of domestic animals (maintenance, production and total needs) and master the composition of feed mixtures/meals that meet the needs of animals without harming the health of animals and people who consume products of animal origin, and not pollute the environment.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to: 1. Explain the concept of digestibility and explain what it depends on 2. Classify nutrients and their more important representatives 3. Define the chemical composition and nutritional value of feed 4. Calculate the productive part of feed, starch units, barley and oat units

5. Differentiate between chemical and physical feed factors that determine the energy, protein, mineral and vitamin value of feed

6. Computationally evaluate the nutritional value of feed in newer practical units based on chemical composition and digestibility coefficient

7. Computationally estimate the nutritional needs of livestock, depending on their body weight and production (sustenance, production needs and required for a unit of product)

8. Describe the basic principles of feeding domestic animals in certain periods of development and production

9. Recognize types of fodder according to their nutritional value for individual types of livestock

10. Identify possible health disorders due to improper use of feed

11. Explain the way of preserving voluminous fodder

12. Explain the procedure for preparing rations/fodder mixtures in the feeding of domestic animals

13. Prepare a meal - a feed mixture that meets the needs of domestic animals, without harmful effects on the health of people and domestic animals, with as little environmental pollution as possible

Literature:

Obligatory:

Pintić V., (2004): Hranidba domaćih životinja. Skripta, III dopunjeno i recenzirano izdanje, Visoko gospodarsko učilište u Križevcima.

Pintić V., Marenčić D., Pintić Pukec Nataša (2016): Hranidba domaćih životinja, Visoko gospodarsko učilište u Križevcima.

Grbeša D., (2004): Metode procjene i tablice kemijskog sastava i hranjive vrijednosti krepkih krmiva. Hrvatsko agronomsko društvo, Zagreb

Pintić V. i grupa autora (2004): Priručnik o proizvodnji i upotrebi stočne hrane-krme. Hrvatsko agronomsko društvo, Zagreb.

Supplementary:

Kirchgeβner M., Roth F.X., Schwarz J.F., Stangl G.I. (2008) Tierernährung, Deutsche Landwirtschafts-Gesellschaft-Verglas-GmbH.

Kirchgessner M., Friesecke H.: (1996): Wirkstoffe in der pratischen Tierernährung. München, Basel, Wien.

> Subject holder: Dejan Marenčić, Ph. D.,college professor

NGUK TBEO	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 38147	MECHANISATION SYS	STEMS IN LIVESTOCK RAISING	ECTS credits: 5
Professional study programme	LIVESTOCK RAISING		Semester: III
Teachers and associates:		Miomir Stojnović, M. Sc., senior lecturer Marija Jakuš Hrestak, mag. ing. agr., asistent	
	Hours		
------------------------	-------		
Lectures	45		
Exercises and seminars	30		
Practical training	-		

SUBJECT OBJECTIVE: enable the students to recognize significance and specificities of application of machines and devices in livestock breeding, to be familiar with construction and work principle of different machines and devices and livestock breeding, as well as to be able to plan required capacities and structure of machines in livestock breeding.

SUBJECT DESCRIPTION: the subject Mechanisation systems in livestock raising deals with the application of machines and devices in animal husbandry production technology, their construction, principle of operation, exploitation features, necessary structure and capacities, and prepares students for the correct selection and use of machines and devices in animal husbandry production.

LEARNING OUTCOMES

LEARNING OUTCOMES		
After completed exam the student will be able to:		
1. To explain the significance and specifics of the use of machines and devices in animal husbandry		
2. Analyze the construction and principle of operation of individual machines and devices in animal husbandry		
3. To evaluate the suitability of different machines and devices in certain branches of animal husbandry		
4. Plan the necessary capacities and structure of machines and devices in animal husbandry		

Literature:

- <u>a) Obligatory for studying and preparing for exam:</u>
 1. Ivanković, A., Filipović, D., Mustać, I., Mioč, B., Luković, Z., Janječić, Z. (2016): Objekti i oprema u stočarstvu, Sveučilište u Zagrebu, Agronomski fakultet, Zagreb
- 2. Brčić J. (1987): Mehanizacija u biljnoj proizvodnji, Školska knjiga Zagreb.
- 3. Brčić J. (1981): Mehanizacija u spremanju sijena, silaže i hranjenju goveda, FPZ Zagreb.

b) Supplementary:

- 1. Katić Z. (1982): Industrijska proizvodnja krmnih smjesa, FPZ Zagreb.
- 2. Havranek Jasmina, Rupić V. (2003.): Mlijeko od farme do mljekare, Zagreb
- 3. Landeka S. (1996): Mehanizacija poljoprivredne proizvodnje, Vinkovci

Subject holder: Miomir Stojnović, M. Sc., senior lecturer



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 38151	VETERINARY MEDICINE		ECTS credits: 4
Professional study programme	LIVESTOCK RAISING		Semester: IV
Teachers and associates:		Tatjana Tušek, Ph. D., college professor Damir Alagić, Ph. D., college professor	
		Hours	
Lectures		45	

Exercises and seminars	30
Practical training	-

SUBJECT OBJECTIVE: enable the students to independently assess health status of domestic mammals and poultry and to point to health problems and notify authorised services. Estimate reproductive status of animals and use regular reproduction in breeding with achievement of optimal number of vital offspring. Evaluate housing of animals and its impact on health status of domestic mammals and problems and solve problems related to adequate housing of animals.

SUBJECT DESCRIPTION: Veterinary medicine is a compulsory subject for students of the professional study of Agriculture, the study direction of Zootechnics. The subject includes a general part whose purpose is to acquaint students with the factors and causative agents that affect the health status of animals and mandatory sanitation measures. Furthermore, the application of mandatory legal measures related to certain infectious and invasive diseases The chapter on reproduction covers the hormonal activity of the mammalian organism, U.O., synchronized estrus, embryo transfer and childbirth and possible complications and consequences. The material also includes a comparison of conventional and organic farming and a homeopathic approach to treatment.

LEARNING OUTCOMES

LEARNING OUTCOMES

1. Differentiate between changes that indicate disease states in domestic breeding animal

2. Identify the correct ways of housing domestic animals

- 3. Specify disinfection, disinsection and pest control measures
- 4. Explain the legal regulations in the prevention of the health status of domestic animals.

5. Identify the physiological phases of the reproductive cycle

6. Decide on a suitable breeder from a veterinary point of view

7. Explain the use of medicines in livestock production

Literature:

Obligatory for studying and preparing for exam:

- Asaj, A. ((2003): Higijena na farmi i u okolišu. Medicinska naklada, Zagreb.
- Brinzej, M. i sur. (1991): Stočarstvo. Školska knjiga, Zagreb.
- Grupa autora (1989): Veterinarski priručnik. Jumena, Zagreb.
- Tušek, T., D. Alagić, V. Nervo (2020): Pojmovnik iz veterinarstva. Visoko gospodarsko učilište u Križevcima. Križevci. (Elektroničko izdanje na mrežnoj stranici Učilišta).

Supplementary:

- Rupić, V. (1986): Zdravstvena zaštita domaćih životinja (I i II dio). Sveučilišna naklada Liber, Zagreb.
- Herak-Perković, V., Grabarević, Ž., Kos, J.(2012): Veterinarski priručnik,6. izdanje, Medicinska naklada, Zagreb.

Subject holder: Tatjana Tušek, Ph. D., college professor

IGUR	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240010	RUMINANT NUTRITION		ECTS credits: 3,5
Professional study programme	LIVESTOCK RAISING		Semester: IV
Teachers and associates:		Dejan Marenčić, Ph. D., college professor Goran Mikec, mag. ing. agr., assistant	
		Hours	ECTS
Lectures		30	2
Exercises and seminars		15	1

Practical training	8	0,5
Student workload outside active classes	48	
Total student workload	101	3,5

SUBJECT OBJECTIVE: enable the students to use adequate and balanced nutrition in order to use the maximum genetic potential of ruminant animals with increases profitability and environment protection.

SUBJECT DESCRIPTION: Introduction, getting to know the specifics of feeding ruminants, the difference between cattle, sheep and goats in the way they utilize nutrients and forage. Recommendations of needs (normatives), composition of meals and ways of feeding ruminants. Feeding of ruminants in certain stages of breeding: dry period, puerperium, lactation, feeding of breeding young, feeding of female/male breeding calves, fattening of calves/calves, methods and feeding methods of fattening. Nutritional ways of preventing metabolic disorders and environmental pollution. Nutritional influences on nutrients and active substances in milk. Compilation and balancing (balancing) of meals depending on the production stages.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to: 1. Describe the specifics of feeding ruminants 2. Describe the principles of feeding ruminants depending on the breeding phase 3. To identify problems in feeding ruminants 4. Prepare appropriate meals for all types and categories of ruminants 5. Analyze food ration on an individual farm

Literature:

Obligatory:

Caput P. (1996) Govedarstvo, Celeber, Zagreb.

Uremović Z., Uremović M., Pavić V., Mioč B., Mužic S., Janječić Z., (2002) Stočartvo. Sveučilišni udžbenik, Agronomski fakultet Sveučilišta u Zagrebu.

Mioč B., Pavić V. (2002) Kozarstvo, Šveučilišni udžbenik, Hrvatska mljekarska udruga, Zagreb.

Uremović. Z. (2004) Govedarstvo, Hrvatska mljekarska udruga, Zagreb

Mioč B., Pavić V., Sučić V. (2007) Ovčarstvo, Sveučilišni udžbenik, Hrvatska mljekarska udruga, Zagreb.

Supplementary:

Hrabak V., Rupić V., (1980) Praktično govedarstvo. Mala biblioteka za stručno osposobljavanje poljoprivrednika. Katalinić I. (1994) Govedarstvo, Biblioteka Hrvatsko obiteljsko gospodarstvo, Nakladni zavod Globus. DLG-Futterwerttabellen (1997) Wiederkäuer, Deutsche Landwirtschafts-Gesellschaft-Verglas-GmbH, Frankfurt. Kirchgeβner M., Roth F.X., Schwarz J.F., Stangl G.I. (2008) Tierernährung, Deutsche Landwirtschafts-Gesellschaft-Verglas-GmbH.

> Subject holder: Dejan Marenčić, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240011	SHEEP AND GOAT RAISING		ECTS credits: 6,5
Professional study programme	LIVESTOCK RAISING		Semester: IV
Teachers and associates:		Tatjana Jelen, Ph. D., college professor Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		45	

Exercises and seminars	30
Practical training	23

SUBJECT OBJECTIVE: enable the students to independently organise sheep and goat breeding and production

SUBJECT DESCRIPTION: The aim of the subject is to train students to independently organize sheep and goat production. Through classes, lectures, exercises and seminars, students will master the material in order to distinguish sheep and goat breeds according to the most important production properties and use, and methods/systems of breeding and utilization of sheep/goats. Students will be familiar with examples of the appropriate way of feeding, carrying out selection and reproduction, and planning preventive and curative health care of sheep/goats with the application of welfare measures in breeding and exploitation. During practical training within the subject, students will plan improvements in sheep/goat breeding based on the actual production situation in the school practicum and on the chosen farm. They will participate in the work of the team and present the achieved results of creating an integrated project task where they will be placed in a situation to connect theoretical and practical knowledge from several subjects in order to be trained for the successful organization of sheep/goat production.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Distinguish between breeds and the most important properties and use of breeds

2. Select an example of a way/system of breeding sheep/goats

3. Give an example of an appropriate way of carrying out selection and reproduction

4. Explain welfare measures in cultivation and exploitation

5. To single out breeding technological procedures that are a prerequisite for successful sheep/goat production

6. Assess production indicators and suggest improvements

7. Plan preventive and curative health care of sheep/goats

8. Create a sheep/goat feeding plan by category

9. To organize successful sheep/goat production

- 10. Plan improvements in sheep/goat breeding based on a practical example
- 11. Participate in team work and present achieved results

Literature:

Obligatory:

- 1. Uremović Z., et. al. (2002): Stočarstvo. Agronomski fakultet Sveučilišta u Zagrebu.
- 2. Mioč B. Pavić Vesna (2002): Kozarstvo, Hrvatska mljekarska udruga, Zagreb
- 3. Mioč, B, Pavić Vesna, Sušić V. (2007): Ovčarstvo, Hrvatska mljekarska udruga, Zagreb

Supplementary:

- 1. Feldhofer S. (1994): Uzgoj i hranidba koza, Hrvatsko mljekarsko društvo, Zagreb
- 2. Franić I. (1994) Kozarstvo, Adria book, Split
- 3. Uremović Z., et. al. (2002): Stočarstvo. Agronomski fakultet Sveučilišta u Zagrebu.

In Krizevci, September 2022

Subject holder: Tatjana Jelen, Ph. D., college professor

NGUK		Edition:
	KRIZEVCI UNIVERSITI OF AFFEIED SCIENCES	April 2017
1860	Subject syllabus	Code:
		Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240012	ANIMAL HYGIENE, ETHOLOGY AND ECOLOGY		ECTS credits: 5
Professional study programme	LIVESTOCK RAISING		Semester: IV
Teachers and associates:		Damir Alagić, Ph. D., college professor Goran Mikec mag. ing. agr. assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students to explain the influence of microclimatic factors on breeding of domestic animals and its influence on behaviour of domestic animals.

SUBJECT DESCRIPTION: During classes, lectures, exercises and practical training, the importance of hygiene in livestock production and the influence of environmental factors affecting animal health will be explained to students. Students will be familiar with the implementation of hygienic and sanitary measures in livestock production, i.e. with disinfection, disinsection and pest control procedures on farms.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain the influence of raising domestic animals on the air quality in and around the barn.

2. List the features and specifics of agricultural production

3. Explain the role of microclimatic factors on the health of domestic animals

4. List and explain physiological and pathological forms of animal behavior

5. Apply and rationally use means for hygienic and sanitary measures

6. Plan and practically apply solutions when it comes to housing animals

7. Develop communication skills and teamwork and present results to a wider audience.

Literature:

1. Asaj, A. (2003): Higijena na farmi okolišu.Medicinska naklada, Zgreb.

2. Asaj, A. (1999): Dezinfekcija i dezinsekcija. Školska knjiga, Zgreb.

3. Grupa autora. (2001): Ekološki leksikon, Ministarstvo zaštite okoliša i prostornog uređenja, Zagreb.

4. Senčić, Đ., B., Antunović (2004): Ekološko stočarstvo. Katava d.o.o., Osijek

5. Vučinić, M.(2006): Ponašanje, dobrobit i zaštita životinja, Beograd

6. Znaor, D. (1996): Ekološka poljoprivreda. Nakladni zavod Globus, Zagreb

Subject holder: Damir Alagić, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240013	FORAGE CROPS AND GRASS PRODUCTION		ECTS credits: 7
Professional study programme	LIVESTOCK RAISING		Semester: IV
Teachers and associates:		Marcela Andreata-Koren, Ph. D., college professor Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		30	

SUBJECT OBJECTIVE: enable the participants to independently organise production of fodder plants in the fields and on natural grasslands.

SUBJECT DESCRIPTION: The situation in the production of fodder plants in the Republic of Croatia. Forms of fodder production on arable land and natural grasslands. Annual and perennial fodder crops on arable land. Forage production on natural grasslands. Storing feed **LEARNING OUTCOMES**

	LEARNING OUTCOMES
1.	Classify types of feed according to the type and content of digestible nutrients
2.	Explain the forms of fodder production
3.	Explain the differences between legumes and non-legumes
4.	Recognize forage crops in different stages of growth and development
5.	Recognize the seeds of forage crops
6.	Determine the possibility of growing certain fodder crops in certain agroclimatic conditions during the year
7.	Calculate the structure/vegetation area and the required amount of fertilizer/nutrients for the production of a specific fodder crop
8.	Plan agrotechnical measures for certain fodder crops
9.	Describe different ways of storing and using fodder
10.	Assess the correctness of certain production of fodder plants and grassland on a certain farm

Literature:

Obligatory:

- 1. Gagro, M. (1998): Ratarstvo obiteljskoga gospodarstva- Industrijsko i krmno bilje. Zagreb.
- 2. Katalinić, I., Pejaković, D., Brčić, J. (2000): Spremanje sjenaže, Zagreb.
- 3. Stjepanović, M., Štafa, Z. i Bukvić Gordana (2008): Trave za proizvodnju krme i sjemena, HMU, Zagreb
- 4. Štjepanović, M., Zimmer, R., Tucak, M., Bukvić, G., Popović, S., Štafa, Z. (2009): Lucerna. Poljoprivredni fakultet Osijek.
- 5. Pospišil, A. (2010): Ratarstvo 1. dio. Zrinski d.d., Čakovec
- 6. Štafa, Z., Stjepanović, M. (2015): Ozime i fakultativne krmne kulture: proizvodnja i korištenje. HMU, Zagreb

Supplementary:

- 1. Gagro, M. (1997): Ratarstvo obiteljskoga gospodarstva- Žitarice i zrnate mahunarke, Zagreb.
- 2. Forenbacher, S. (1998): Otrovne biljke i biljna otrovanja životinja, Školska knjiga, Zagreb.
- 3. Različiti i pojedinačni podaci o krmnim kulturama iz znanstvenih i stručnih časopisa (Krmiva, Stočarstvo, Poljoprivredni savjetnik, Mljekarstvo i dr.

Subject holder: Marcela Andreata-Koren, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240014	PRODUCTION ORGA CALCULATIONS IN LI	ECTS credits: 6	
Professional study programme LIVESTOCK RAISING			Semester: V
Teachers and associates:		Lidija Firšt Godek, M. Sc., senior lecturer Milan Suša, mag. ing. agr, assistant	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students for adequate selection of organisational measures for rational administration of tasks in livestock breeding for achievement of profitable livestock production and successful and independent farm management.

SUBJECT DESCRIPTION: The subject enables the acquisition of basic knowledge and the basis for the correct choice of organizational measures and procedures for the rational performance of work in livestock breeding with the aim of profitable production and independent management of the family farm.

LEARNING OUTCOMES

LEARNING OUTCOMES
After completed exam the student will be able to:
1. Define basic terms in the field of production organization
2. Differentiate risks and risk management methods
3. Explain the organizational structure and business functions
4. Estimate the time spent on work tasks in breeding a certain type of livestock
5. Define basic terms from the theory of costs
6. Calculate costs in livestock production
7. Define basic concepts, principles, types and methods of calculations
8. Compile an analytical calculation and a calculation of the coverage of variable costs
9. Show the organization of certain types of livestock production
10. Compile the calculation for the selected livestock production and present it

Literature:

Obligatory:

Njavro M., (2009.): Uprava poljoprivrednog gospodarstva, Skripta Agronomski fakultet, Zagreb Karić M., (2002): Kalkulacije u poljoprivredi, Poljoprivredni fakultet, Osijek Žugaj M., Šehanović J., Cigula M., (2004): Organizacija, Tiva, Varaždin Grupa autora (2012): Katalog kalkulacija poljoprivredne proizvodnje. HZZPSS, Zagreb.

Supplementary:

Sikavica P., Novak, M., (1999): Poslovna organizacija, III. izdanje, Informator, Zagreb. Škrtić M., (2006): Poduzetništvo. Sinergija, Zagreb

Subject holder: Lidija Firšt Godek, M. Sc., senior lecturer



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240015	TRADE OF CATTLE A	ND ANIMAL PRODUCTS	ECTS credits: 4,5
Professional study	LIVESTOCK RAISING		Semester: V
programme			
		Damir Alagić, Ph. D., college professor	
Teachers and associates	:	Tatjana Tušek, Ph. D., college professor	
		Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		8	

SUBJECT OBJECTIVE: enable the students to comprehend technological processes in meat processing industry and list various microbiological hazards for animals and people which are linked to such kind of production.

SUBJECT DESCRIPTION: Traffic in livestock and animal products is a mandatory subject for students in the third year of the professional undergraduate study of Agriculture, studying Zootechnics. the subject covers the following topics: chemical composition of meat, procedures with animals from arrival at the livestock depot of the slaughterhouse to procedures for processing and preserving meat. They thoroughly describe the procedures of disinfection, disinsection and deratization, i.e. sanitation measures in the slaughterhouse. Furthermore, students are introduced to the application of various food additives used in the meat processing industry and the application of various packaging materials.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

- 1. Explain the significance and specifics of animal products
- 2. Distinguish the peculiarities of animal transport
- 3. Explain the differences between permanent and semi-permanent meat products
- 4. Assess the importance of traceability of products of animal origin
- 5. Explain the differences between categories of meat
- 6. Describe different methods of preserving meat
- 7. Critically assess the implemented sanitation measures
- 8. Plan improvements in the circulation of livestock and animal products

Literature:

- 1. Grupa autora (1989): Veterinarski priručnik. Jumena, Zagreb. Zagreb.
- Hadžiosmanović, M.(2001): Higijena i tehnologija mesa, veterinarsko-sanitarni nadzor životinja za klanje i mesa, Sveučilište Zagreb, Zagreb
- 3. "Meso" prvi hrvatski časopis o mesu
- 4. Njari, B., Zdolec, N.(2012): Klaonička obrada iveterinarski pregled, Veterinarski fakultet Zagreb, Zagreb 2012.
- 5. Živković, J.(1986): Higijena i tehnologija mesa, kakvoća i prerada I, Školska knjiga, Zagreb

Subject holder: Damir Alagić, Ph. D., college professor



Edition: April 2017 Code:

Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240016	PIG RAISING		ECTS credits: 6,5
Professional study programme	LIVESTOCK RAISING		Semester: V
Teachers and associates:		Tatjana Jelen, Ph. D., college professor Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		23	

SUBJECT OBJECTIVE: enable the students for independent organisation of pig breeding and production.

SUBJECT DESCRIPTION: The aim of the subject is to train students to independently organize pig production. Through classes, students will master the material in lectures, exercises and seminars in order to distinguish pig breeds, plan ways of keeping and optimally profitable utilization. Students will be familiar with appropriate pig

breeding systems, methods of feeding, carrying out selection and reproduction, and planning preventive and curative health care with the application of welfare measures. During the professional practice within the subject, students will plan improvements in pig breeding based on the actual production situation on selected farms. They will participate in the work of the team and present the achieved results of creating an integrated project assignment where they will be placed in a situation to connect theoretical and practical knowledge from several subjects in order to be trained for the successful organization of pig farming production.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to:
1. Describe pig breeds and their most important characteristics
2. Give an example of how to breed pigs for successful production
3. Select an example of carrying out selection and reproduction
4. Explain welfare measures in pig farming
5. Explain the procedure for assessing the quality of halves and meat
6. Differentiate the systems of keeping pigs
7. Assess production indicators and suggest improvements
8. Plan accommodation facilities on the farm
9. Plan preventive and curative health care for pigs
10. Prepare a meal for certain categories of pigs
11. Organize successful pig production
12. To plan improvements in pig breeding based on an example from practice
13. Participate in team work and present achieved results

Literature:

Obligatory:

1. Ivanković, A., D. Filipović, I. Mustać, B. Mioč, Z. Luković, Z. Janječić (2016): Objekti i oprema u stočarstvu. Sveučilište u Zagrebu Agronomski fakultet.

- 2. Kralik Gordana, et.al (2007): Svinjogojstvo: Biološki i zootehnički principi, Osijek, Poljoprivredni fakultet Osijek
- 3. Uremović Marija, Uremović Z. (1997): Svinjogojstvo, Agronomski fakultet Sveučilišta u Zagrebu <u>Supplementary:</u>
- 1. Senčić Đ., Pavičić Ž., Bukvić Ž (1996): Intenzivno svinjogojstvo, Nova Zemlja, Osijek
- 2. Uremović, M., Uremović, Z., (2004): Praktično svinjogojstvo, Insula Ivanich, Kloštar Ivanić

Subject holder: Tatjana Jelen, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240017DAIRY SCIENCE AND		CHEESE PRODUCTION	ECTS credits: 5
Professional study programme	LIVESTOCK RAISING		Semester: V
Teachers and associates:		Dražen Čuklić, Ph. D., college professor Goran Mikec, mag. Ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the participants to independently organise or administer production of dairy products in small or large processing facilities.

SUBJECT DESCRIPTION: In the undergraduate subject Dairy science and cheese production, students acquire basic knowledge about the physico-chemical and hygienic parameters of milk. Students in the part of processing

milk and milk products acquire basic knowledge of the technological processes of production of certain milk products. While laboratory exercises allow them to acquire knowledge about the physical, chemical and microbiological properties of milk and milk products. During field classes, they get acquainted with practical experiences in the work of small and large dairy processing plants.

LEARNING OUTCOMES

LEARNING OUTCOMES		
After completed exam the student will be able to:		
1. Define the composition of milk		
2. Categorize milk on the basis of chemical and microbiological composition		
3. Define the types of dairy products		
4. Explain the technology of production of dairy products		
5. Produce individual dairy products in a dairy workshop		
6. Plan improvements in milk processing based on an example from practice		

Literature:

- 1. CAPUT, P. (1996): Govedarstvo. Celeber d.o.o. Zagreb.
- 2. DAKIĆ, ANA (2002): Radna uputa za uzimanje uzoraka mlijeka. Hrvatski stočarski centar-Zagreb.,SLKM Križevci.
- 3. SABADOŠ, D. (1996): Kontrola i ocjenjivanje kakvoće mlijeka i mliječnih proizvoda. II dopunjeno izdanje. Hrvatsko mljekarsko društvo. Zagreb.
- 4. HRVATSKA MLJEKARSKA UDRUGA (2000): Kako postići kakvoću svježeg sirovog mlijeka zadanu pravilnikom. Zagreb.
- 5. HRVATSKI PRAVILNIK O KAKVOĆI SVJEŽEG SIROVOG MLIJEKA (NN 102/00)
- 6. JASMINA HAVRANEK., RUPIĆ V. (2003): Mlijeko od farme do mljekare. Hrvatska mljekarska udruga .Zagreb.
- 7. LJUBICA TRATNIK (1998): Mlijeko tehnologija, biokemija i mikrobiologija. Hrvatska mljekarska udruga. Zagreb.

Subject holder: Dražen Čuklić, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 38856	AGRICULTURAL POLICY		ECTS bodovi: 2
Professional study programme	LIVESTOCK RAISING		Semester: VI
Teachers and associates:		Kristina Svržnjak, Ph. D., college professor	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: familiarise the students with the influence of agricultural policy on development of agriculture and rural development in Croatia.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain agrarian policy as a strategic policy of the Republic of Croatia

2. Identify the components of agrarian policy and the basic laws concerning the development of agriculture and rural development

3.Use the TISUP information system

4. Differentiate between different support programs in agriculture and rural development at the national and local self-government levels

4. Create a SWOT analysis related to agricultural production or rural development

5. Assess the implementation of the objectives and measures of the agrarian policy

6. Explain your position regarding the evaluation of the implementation of the goals and measures of the agrarian policy

7. Calculate the economic value of the economy

8. Use the ARKOD information system

Literature:

Obligatory :

1. Petrač, B., (2002.): Agrarna ekonomika, Ekonomski fakultet u Osijeku i Poljoprivredni fakultet u Osijeku, Osijek (poglavlje agrarna politika)

Supplementary:

1. Publikacije, strategije i poljoprivredno zakonodavstvo s Internet stranica Ministarstva poljoprivrede (www.mps.hr)

> Subject holder: Kristina Svržnjak, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 215007 PRACTICAL TRA		NG	ECTS credits: 18
Professional study programme	LIVESTOCK RAISING		Semester: VI
Teachers and associates:		Tatjana Jelen, Ph. D., college professor Dražen Čuklić, Ph. D., Mentor of practical training at the University Mentor of practical training outside University	
		Hours	
Lectures		-	
Exercises and seminars		-	
Practical training		420	

SUBJECT OBJECTIVE: apply and extend acquired knowledge and skills in real work environment, register observations and elaborate critical review or administer research for elaboration of final thesis.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Describe the activity and organizational structure at the place of practice y

2. Apply the acquired theoretical knowledge needed at the place of practical training

3. Perform specific tasks under supervision or independently

4. To solve a given problem in known circumstances

5. Take a critical look at the tasks performed at the place of practice and, if necessary, suggest improvements

6. Effectively participate in teamwork

7. Make decisions independently

8. Show better communication skills

9. Express oneself better in speech and in writing

In Krizevci, September 2022

Subject holder: Tatjana Jelen, Ph. D., college professor

VGUR L	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240018	DIGESTION PHYSIOLOGY AND LIVESTOCK NUTRITION			ECTS credits: 7
Professional study programme	MANAGEMENT IN AGRICULTURE			Semester: III
Teachers and associates:		Tatjana Tušek, Ph. D., college professor Dejan Marenčić, Ph. D., college professor Goran Mikec, mag. ing. agr., assistant		
		Hours		ECTS
Lectures		45		3
Exercises and seminars		45		3
Practical training		15		1
Student workload outside active classes		98		
Total student workload		203		7

SUBJECT OBJECTIVE: enable the students to describe and differentiate physiology of digestion and specificities of metabolism (metabolism of carbohydrates, fats, water, vitamins and minerals) of domestic mammals and poultry, to explain specific neuro-hormonal management of chemical processes on the level of food digestion and metabolic processes in liver, to be able to define basic principles and relations which exist between food as the source of nutrients and physiological condition, as well as production metabolism of domestic mammals and poultry, to enable the student to independently assess content of nutrients in fodder and feed formulas and to estimate nutritional needs of livestock of all categories in line with legal regulations and environment protection measures.

SUBJECT DESCRIPTION: Physiology of digestion and feeding of livestock is a compulsory subject for students of the professional study of Agriculture, studying Management in agriculture. Content-wise, the subject includes livestock feeding and comparative physiology of digestion and the specifics of metabolism (metabolism of carbohydrates, proteins, fats, water, vitamins and minerals) of domestic mammals and poultry. It also includes specific neuro-hormonal management of biochemical processes at the level of food digestion and metabolic processes in the liver. In intensive livestock production, among the paragenetic factors, livestock feeding plays the most important role. The production of livestock products is based on the ability of domestic animals to use less significant or almost unusable feed for human consumption and turn it into products of high nutritional value for the population.

LEARNING OUTCOMES

LEARNING OUTCOMES				
After completed exam the student will be able to:				
1. Distinguish the life processes and reactions of animals to their environment				
2. Explain the laws of feeding, which in animal husbandry represent the basis for economically profitable production with the				
simultaneous compliance of that production and the physiological status of the organism				
3. Differentiate between the digestive processes and specificities of ruminant, non-ruminant and poultry digestion				
4. Differentiate metabolic processes and specificities of metabolism in ruminants, non-ruminants and poultry				
5. Explain nutrients and list the most important representatives				
6. Define the chemical composition and nutritional value of feed				
7. Calculate the productive part of feed, starch units, barley and oat units				
8. Differentiate between chemical and physical feed factors that determine the energy, protein, mineral and vitamin value of				
feed				
9. Calculate the nutritional value of feed in newer practical units based on chemical composition and digestibility coefficient				
10. Calculate the nutritional needs of livestock, depending on their body weight and production (sustenance, production				
needs and required for a unit of product)				
11. Recognize types of fodder according to their nutritional value for individual types of livestock				
12. Prepare a meal - a feed mixture that meets the needs of domestic animals, without harmful effects on the health of people				
and domestic animais, with as little environmental pollution as possible.				

Literature:

Obligatory for studying and preparing for exam:

- Babić, K., Melita Herak, Tatjana Tušek (2003):U: Anatomija i fiziologija domaćih životinja. Visoko gospodarsko učilište Križevci i Zrinski d. d. Čakovec.
- Grbeša D., (2004): Metode procjene i tablice kemijskog sastava i hranjive vrijednosti krepkih krmiva.
 Hrvatsko agronomsko društvo, Zagreb.
- Pintić V. (2004): Hranidba domačih životinja. Skripta, III dopunjeno i recenzirano izdanje, Visoko gospodarsko učilište u Križevcima.
- Pintić V. i grupa autora (2004): Priručnik o proizvodnji i upotrebi stočne hrane-krme. Hrvatsko agronomsko društvo, Zagreb.

- Pintić., Marenčić D., Pintić Pukec Nataša (2016): Hranidba domaćih životinja, Visoko gospodarsko učilište u Križevcima.
- Tušek, Tatjana (2 000.): Fiziologija stoke (praktikum). Visoko gospodarsko učilište Križevci, Križevci, 1-45.

Supplementary:

- Guyton, A. C. (1989): Medicinska fiziologija. Medicinska knjiga. Beograd-Zagreb.
- Kirchgessner M., Friesecke H.: (1996): Wirkstoffe in der pratischen Tierernährung. München, Basel, Wien.
- Kirchgessner M., (1997): Tierernährung, 10., neubearbeitete Auflage, DLG Frankfurt (Main).
- Randall, D. W. Burggren, Kathleen French, R. Fernald (1997): Eckart Animal Physiology. Mechanisms and Adaptations. (Fourth edition). W. H. Freeman and Company, New-York.
- Schneider Erica, Schneider U., (2003; 2004): Računalni program. Futerberechnung Rinder und Schweine, Coesfeld, Deutschland.
- Schumacher U., (2002): Milchviehfütterung im ökologischen Landbau. Praxis des ökolandbaus, 1. Auflage, Bioland Verglas GmbH, Mainz.

Subject holder: Tatjana Tušek, Ph. D., college professor

VGUR IBBO	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240019	FORAGE CROPS AND GRASS PRODUCTION		ECTS credits: 5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Marcela Andreata-Koren, Ph. D., college professor Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the participants to independently organise production of fodder plants in the fields and on natural grasslands.

SUBJECT DESCRIPTION: The situation in the production of fodder plants in the Republic of Croatia. Forms of fodder production on arable land and natural grasslands. Annual and perennial fodder crops on arable land. Forage production on natural grasslands. Storing feed **LEARNING OUTCOMES**

	LEARNING OUTCOMES
1.	Classify types of feed according to the type and content of digestible nutrients
2.	Explain the forms of fodder production
3.	Explain the differences between legumes and non-legumes
4.	Recognize forage crops in different stages of growth and development
5.	Recognize the seeds of forage crops
6.	Determine the possibility of growing certain fodder crops in certain agroclimatic conditions during the year
7.	Calculate the structure/vegetation area and the required amount of fertilizer/nutrients for the production of a specific fodder crop
8.	Plan agrotechnical measures for certain fodder crops
9.	Describe different ways of storing and using fodder
10.	Assess the correctness of certain production of fodder plants and grassland on a certain farm

Literature:

Obligatory:

- 1. Gagro, M. (1998): Ratarstvo obiteljskoga gospodarstva- Industrijsko i krmno bilje. Zagreb.
- 2. Katalinić, I., Pejaković, D., Brčić, J. (2000): Spremanje sjenaže, Zagreb.
- 3. Stjepanović, M., Štafa, Z. i Bukvić Gordana (2008): Trave za proizvodnju krme i sjemena, HMU, Zagreb
- 4. Štjepanović, M., Zimmer, R., Tucak, M., Bukvić, G., Popović, S., Štafa, Z. (2009): Lucerna. Poljoprivredni fakultet Osijek.
- 5. Pospišil, A. (2010): Ratarstvo 1. dio. Zrinski d.d., Čakovec
- 6. Štafa, Z., Stjepanović, M. (2015): Ozime i fakultativne krmne kulture: proizvodnja i korištenje. HMU, Zagreb

Supplementary:

- 1. Gagro, M. (1997): Ratarstvo obiteljskoga gospodarstva- Žitarice i zrnate mahunarke, Zagreb.
- 2. Forenbacher, S. (1998): Otrovne biljke i biljna otrovanja životinja, Školska knjiga, Zagreb.
- 3. Različiti i pojedinačni podaci o krmnim kulturama iz znanstvenih i stručnih časopisa (Krmiva,

Stočarstvo, Poljoprivredni savjetnik, Mljekarstvo i dr.

Subject holder: Marcela Andreata-Koren, Ph. D., college professor



Edition: April 2017 Code:

Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240020	CATTLE RAISING		ECTS credits: 5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Dražen Čuklić, Ph. D., college professor Goran Mikec, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the participants to independently organise cattle production or provide consulting services on cattle production and family farms or larger farms.

SUBJECT DESCRIPTION: Cattle production requires systematic education of experts with regard to the acquisition of new knowledge and market needs. During the classes in the Cattle Breeding course, students will be trained to organize and implement successful cattle production in the new conditions of transition, intensification and open market, and will be able to adapt to the developed cattle production in the EU.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Describe cattle breeds and their production characteristics			
2. Organize efficient cattle meat production			
3. Organize efficient cattle milk production			
4. Organize efficient combined cattle production			
5. Explain cattle evaluation procedures			
6. Plan improvements on a cattle farm based on a practical example			

Literature:

Obligatory:

- 1. Caput, P. (1996): Govedarstvo, Celeber, Zagreb
- 2. Uremović, Z. (2004) : Govedarstvo, Hrvatska Mljekarska udruga Zagreb.
- 3. Vujčić, S. (1991) : Pasmine goveda., Prosvjeta, Bjelovar.
- 4. Čuklić, D. (2005): Uzgoj goveda., Interna Skripta I., Visoko gospodarsko učilište u Križevcima.

Supplementary:

- 1. Hrabak. V., Rupić, V. (1980): Praktično govedarstvo., Zagreb.
- 2. Posavi, M. (1996): Linear scoring metoda. Zagreb.
- 3. DLG Futterwerttabellen Wiederkauer,, Frankfurt., DLG- Verlag. 1998.
- 4. HAD: Stočarstvo: Časopis za unapređenje stočarstva. Hrvatsko agronomsko društvo.

Subject holder: Dražen Čuklić, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240021	FARM MECHANIZATION AND AUTOMATION		ECTS credits: 5
Professional study	MANAGEMENT IN AGRICUITURE		Semester: III
programme			
Teachers and associates:		Miomir Stojnović, M. Sc., senior le	cturer
		Vlado Kušec, M. Sc., senior lecturer	
		Marija Jakuš Hrestak, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students to explain specificities and importance of mechanisation and automatization of work processes on a farm, describe construction and principles of work of machines and devices on a farm and assess justifiability and purposeness of their usage on a farm.

SUBJECT DESCRIPTION: The subject Farm mechanization and automation aims to train students to be able to explain the specifics and significance of the mechanization and automation of work processes on the farm, describe the construction and principle of operation of machines and devices on the farm, and assess the justification and expediency of their use on the farm.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain the significance and specifics of the application of mechanized and automated processes on the farm

2. Describe the construction and principle of operation of individual machines and devices on the farm

3. Assess the expediency and justification of mechanization and automation of work processes on a farm

4. Plan the necessary capacities and structure of machines and devices on the farm

Literature:

Obligatory for studying and preparing for exam:

- 1. Zimmer R., Banaj Đ., Brkić D., Košutić S. (1997): Mehanizacija u ratarstvu, Osijek
- 2. Brčić J. (1987): Mehanizacija u biljnoj proizvodnji, Zagreb
- 3. Brčić J. (1997): Mehanizacija u voćarstvu i vinogradarstvu
- 4. Ivanković, A., Filipović, D., Mustać, I., Mioč, B., Luković, Z., Janječić, Z. (2016): Objekti i oprema u stočarstvu, Sveučilište u Zagrebu, Agronomski fakultet Zagreb

Supplementary:

- 1. Katić Z. (1982): Industrijska proizvodnja krmnih smjesa, Zagreb
- 2. NIRD (1977): Machine milking, Reading England, England
- 3. Havranek Jasmina, Rupić V. (2003): Mlijeko od farme do mljekare, Zagreb
- 4. Dlg-test de, Das Net-Magazin Fur Landtechnik

Subject holder: Miomir Stojnović, M. Sc., senior lecturer



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 161596	PRINCIPLES OF AGRICULTURAL MANAGEMENT		ECTS credits: 4
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Kristina Svržnjak, Ph. D., college professor Krunoslav Škrlec, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: Introduce the students with basic notions of management and application of strategic and operative management in agricultural sector.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain basic concepts from the field of management

2. Create a SWOT analysis related to the specific agricultural holding

3. Apply SWOT analysis in business planning

4. Use the brainstorming method in business planning

5. Create a Gantt diagram in business planning

6. Distinguish the key factors for determining the goals of the agricultural economy

7. Manage time

8. Search relevant databases in search of relevant data necessary for making business decisions and for developing ideas for agricultural business

9. Participate in team work

10. Present your own research results to a wider audience

Literature:

Obligatory for studying and preparing for exam:

- 1. Svržnjak, Kristina: Osnove menadžmenta u poljoprivredi, interna skripta, Visoko gospodarsko učilište u Križevcima
- Nicholas C. Siropolis (1995): Menadžment malog poduzeća, četvrto izdanje, Mate, Zagreb (pojedina poglavlja)

Supplementary:

- 1. Deželjin, J. i dr.: "Poduzetnički management: izazov, rizik, zadovoljstvo", HITA, Zagreb, 2002.
- 2. Publikacije Centra za poduzetništvo po županijama u Hrvatskoj (<u>www.poduzetnistvo.org</u>)
- 3. Podaci i publikacije Hrvatske gospodarske komore, www.hgk.hr
- 4. Podaci i publikacije Ministarstva poljoprivrede www.mps.hr

Subject holder: Kristina Svržnjak, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 38890	PRINCIPLES OF BUSI	ECTS credits: 4		
Professional study	MANAGEMENT IN AGRICULTURE		Semester: IV	
Teachers and associates:	:	Sandra Kantar, Ph. D., college pro	ofessor	
		Hours		
Lectures		30		
Exercises and seminars		30		
Practical training		-		

SUBJECT OBJECTIVE: recognize importance of business ethics in business activity

CILJ PREDMETA: To acquaint students with the theory and practice of business ethics in the country and the world. The course aims to emphasize the importance of business ethics in the business world, and train students to recognize and reflect on the ethical dimensions of business behavior in a business environment. In this way, students will develop critical and reasoned thinking when making ethical judgments.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with the basic terms and application of business ethics in a business environment. Within the framework of the course, one tries to develop critical and argumentative thinking, and to take a stand when making business judgments. Students will apply the acquired theoretical and practical knowledge by solving thematic tasks.

LEARNING OUTCOMES

LEARNING OUTCOMES				
After completed exam the student will be able to:				
1. Define and describe basic concepts from business ethics				
2. Assess the importance of ethical dilemmas in the business system				
3. Analyze the elements of ethical and socially responsible behavior and business in a specific company				
4. Separate ethical and unethical examples in the business system suitable for discussion and argumentation				
5. Develop students' critical thinking about today's trends in the business system and form ethical attitudes				
6. Demonstrate written and oral communication skills in the field of business ethics				
7. Apply the acquired knowledge to the independent creation of thematic tasks				

Literature:

Obligatory

- 1. Krkač, K.: (2016): Poslovna etika, korporacijska i društvena odgovornost i održivost, Zagreb: Mate (odabrana poglavlja)
- 2. Pupovac, D. (2006): Etika za menadžere, Rijeka: Veleučilište u Rijeci (odabrana poglavlja)
- 3. Pupovac, D. (2020): Poduzetnička etika, Rijeka: Veleučilište u Rijeci (odabrana poglavlja)

Supplementary

- 1. Bebek, B., Kolumbić, A.(2005): Poslovna etika, Zagreb: Sinergija. (odabrana poglavlja)
- 2. Rijavec, M., Miljković, D.(1999): Menadžerske vještine, Zagreb: IEP-2
- 3. Rijavec, M., Miljković, D. (2001): Menadžerske vještine 2, Zagreb: IEP-2
- 4. Rijavec, M., Miljković, D. (2002): Menadžerske vještine 3, Zagreb: IEP-2
- 5. Vig, S. (2019): Poslovna etika: kako razviti autentično vodstvo i izgraditi kulturu zadovoljnih i angažiranih zaposlenika programima etike i usklađenosti?, Zagreb: Codupo.

Subject holder: Sandra Kantar, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240022	MARKETING		ECTS credits: 5,5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Silvije Jerčinović, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		23	

SUBJECT OBJECTIVE: enable the students to gain knowledge about the concept of marketing as an important business and management discipline, as well as to learn about marketing strategy and marketing communication.

SUBJECT DESCRIPTION: Acquaint students with basic knowledge about the concept of marketing as an important business management discipline, marketing strategy and marketing communication.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Define and explain basic concepts from the field of marketing.

2. Recognize the basic elements of the marketing

3. Use a promotional mix for better promotion of agricultural products

mix 4. Differentiate between different promotional options and elements of the promotional mix.

5. Create a SWOT analysis related to a specific agricultural company.

6. Based on the SWOT analysis, identify the key factors for planning and creating business and marketing activities of the family farm

7. Differentiate between different approaches to market research and direct sales

8. Evaluate the critical points in the marketing plan of the agricultural company.

9. Create a marketing strategy for special areas of marketing such as food marketing or marketing of organic products.

10. Explain the role of social responsibility of marketing.

11. Express clearly and with arguments about your views regarding the evaluation of marketing activities on the analyzed examples of agricultural enterprises.

12. Participate in team work and present research results to a wider audience.

13. Recognize the principles of marketing planning and elements of marketing strategy using examples of good practice in real conditions

Literature:

- 1. Previšić. J., Ozretić Došen, Đ., ur. (2004). Marketing, Zagreb, ADVERTA
- 2. Grbac, B., (2010). Marketinške paradigme stvaranje i razmjena vrijednosti, Rijeka, SVEUČILIŠTE U RIJECI – EKONOMSKI FAKULTET
- 3. Kotler, P., (1994). Marketing managment, Zagreb, INFORMATOR
- 4. Kesić, T. (2006). Ponašanje potrošača, Zagreb, OPINIO
- 5. Marušić, M., Vranešević, T. (2001). Istraživanje Tržišta, Zagreb, ADECO
- 6. Renko, N. (2005), Strategija marketinga, Zagreb, NAKLADA LJEVAK

Obligatory/Supplementary:

- 1. Kotler, P., Lee, N. (2009). Društveno odgovorno poslovanje, Zagreb, MEP
- 2. Leko-Šimić, M. (2002). Marketing hrane, Osijek: Ekonomski fakultet.
- 3. Kolega, A., Božić, M. (2001). Hrvatsko poljodjelsko tržište, Zagreb: Tržništvo.
- 4. Kotler, P. (1988). Upravljanje marketingom I i II, Zagreb: Informator.
- 5. Karpati, T. (2001). Markting u dinamici, Osijek: Ekonomski fakultet.
- 6. Kohls, R. (1998). Marketing of agricultural products, New Jersy, PURUDE UNIVERSITY
- 7. Bangs, David H., Jr. (1998). Plan marketinga, Zagreb: «Jakubin i sin»; Osijek: Centar za poduzetništvo

In Krizevci, September 2022

Subject holder: Silvije Jerčinović, Ph. D., college professor


KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240023	INDUSTRIAL CROP PRODUCTION		ECTS credits: 5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Zvjezdana Augustinović, Ph. D., college professor Martin Bužić, mag. ing. agr.	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students for independent production of industrial crops at agricultural farm.

SUBJECT DESCRIPTION: The aim of the subject is to train students for the independent production of industrial plants on an agricultural farm. The course program Cultivation of industrial plants through lectures, exercises, seminars and an integrated project assignment enables students to acquire fundamental theoretical and practical knowledge in the production of the main industrial crops. For each culture, the importance and use, production and

areas, distribution, morphological and biological properties, requirements according to organic conditions and production technology are discussed.

LEARNING OUTCOMES

	LEARNING OUTCOMES
1.	Describe the main morphological and biological characteristics of industrial cultures
2.	Recognize the stages of growth and development of industrial cultures
3.	Assess the agronomic properties of individual varieties and hybrids of industrial crops and select and recommend for cultivation crops and varieties/hybrids that correspond to specific agroorganic conditions
4.	Explain the technology of production of industrial crops and propose appropriate agrotechnical measures
5.	Plan and calculate the basic parameters (amount of fertilizers, seeds, etc.) for the production of industrial crops
6.	Describe and explain the production of industrial crops as raw material for biofuel production

Literature:

a) Obligatory for studying and preparing for exam:

- 1. Augustinović, Zvjezdana (2016) : Uzgoj industrijskog bilja, Visoko gospodarsko učilište u Križevcima
- 2. Pospišil, Milan (2013.): Ratarstvo, II. dio industrijsko bilje
- 3. Gagro, M., (1998): Industrijsko i krmno bilje, Hrvatsko agronomsko društvo, Zagreb

b) <u>Supplementary:</u>

- 4. Butorać, Jasminka (2009.): Predivo bilje, Kruger d.o.o., Zagreb
- 5. Butorac, Jasminka (2009.): Duhan, Kruger d.o.o., Zagreb
- 6. Vratarić Marija, i sur. (2004): Suncokret (Helianthus annuus), monografija, Poljoprivredni institut Osijek
- 7. Hawks, S.N., Collins W.K. (1994): Načela proizvodnje virginijskog duhana, Ceres, Zagreb
- 8. Vaughan, John Griffith (1997): The new Oxford book of food plants, Oxford, Oxford University Press

Subject holder: Zvjezdana Augustinović, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240024	VEGETABLE GROWING		ECTS credits: 6,5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Tomislava Peremin Volf, M. Sc., senior lecturer Martin Bužić mag. ing. agr.	
		Hours	
Lectures		30	
Exercises and seminars		45	
Practical training		23	

SUBJECT OBJECTIVE: enable the students for independent production of vegetables in open areas for certain use (fresh or intended for processing).

SUBJECT DESCRIPTION: The aim of the subject "Growing vegetables" is to train students for the independent production of vegetables outdoors for a specific purpose (fresh market or processing). Through the course, students acquire the basic theoretical and practical knowledge necessary for successful outdoor vegetable production. The general part deals with the importance of vegetables in human nutrition, the basic features of vegetable growing as an economic branch, and the conditions for establishing vegetable production. Students will also learn about vegetable crops and their systematics, vegetable crop seeds, vegetable crop assortment, protected areas in vegetable growing and growing seedlings. In the special section for the most important vegetable species from the

families: Alliaceae, Brassicaceae, Solanaceae, Cucurbitaceae, Asteraceae, Apiaceae, Fabaceae, Asteraceae and Chenopodiaceae, morphological and biological properties, soil requirements and crop rotation, variety selection, determining the required amount of seeds and fertilizers are discussed. soil cultivation and fertilization, growing seedlings, sowing and planting techniques, care measures during the growing season, and harvesting and storage.

LEARNING OUTCOMES

	LEARNING OUTCOMES
1.	Explain the features of vegetable production
2.	Recognize and name the main vegetable crops in the stage of technological ripening and their seeds
3.	Explain the advantages and disadvantages of different ways of growing vegetable seedlings
4.	Calculate the required amount of seeds and/or seedlings and the required amount of fertilizer for the production of the selected vegetable crop
5.	Describe the most important morphological and biological properties of vegetable crops and growing conditions
6.	Choose a variety or hybrid for a specific purpose, area and growing dates
7.	Describe and explain the production technology of the selected vegetable crop

Literature:

Obligatory:

1. Lešić Ružica i sur. (2004): Povrćarstvo. Zrinski d. d., Čakovec

2. Matotan, Z.(2004): Suvremena proizvodnja povrća, Nakladni zavod Globus, Zagreb

3. Pavlek Paula i sur. (1985): Opće povrćarstvo, Sveučilište u Zagrebu

4. Parađiković, Nada (2009): Opće i specijalno povrćarstvo, Poljoprivredni fakultet u Osijeku, Osijek

Supplementary:

1. Dadaček, Nada, Peremin Volf, Tomislava (2008): Agroklimatologija, Visoko gospodarsko učilište u Križevcima, Križevci

2. Rubatzky, V., Yamaguchi, E.(1996): World vegetables, Champam&Hall, New York.

In Krizevci, September 2023

Subject holder: Tomislava Peremin Volf, M. Sc., senior lecturer



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 215003	NUTRITION AND PLANT PROTECTION METHODS		ECTS credits: 5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Marijana Ivanek-Martinčić, Ph. D., college professor Ivka Kvaternjak, Ph. D., college professor	
		Hours	
Lectures		45	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: Introduce the students with relations and principles of plant nutrition and relate basic knowledge on usage of nutrients from mineral and organic fertilizers with the needs of individual plant species/cultivars. Introduce the students with the role of useful and toxic elements in plant physiology. Introduce the students with the most significant characteristics of harmful organisms in plant production (pests, diseases and weeds) and with methods and systems of plant protection. On the example of protection of corn introduce the students with principles of integrated plant protection.

Enable the students to use adequate nutrition and fertilization of plants in direct plant production in order to achieve satisfactory yields with optimal usage of plant fertility potential and soil fertility with maximum preservation of natural

resources of fresh water, biodiversity of ecosystems and preservation of fertility and productivity of soil surfaces. Train the students to administer crop protection from harmful organisms in organicly acceptable way.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with the relationships and legalities of plant nutrition and to connect basic knowledge about the way to use nutrients from mineral and organic fertilizers with the needs of individual plant species/cultivars. To acquaint students with the role of useful and toxic elements in plant physiology. To train students so that in immediate production, they can achieve satisfactory yields through proper feeding and fertilization of plant crops, with optimal utilization of the potential of plant fertility and soil fertility and maximum preservation of natural resources of healthy water, biodiversity of ecosystems and maintenance of fertility and productivity of land surfaces. The aim of the second part of the course is to acquaint students with the most important features of harmful organisms in plant production (pests, diseases and weeds) and with methods and systems for protecting plants from harmful organisms. Using the example of corn protection, introduce students to the protection measures of an agricultural crop based on the principles of integrated protection. Train them to protect crops from harmful organisms in an environmentally friendly way.

LEARNING OUTCOMES

LEARNING OUTCOMES

1. Classify plant nutrients according to their significance for plants and physiological functions

2. Differentiate soil according to fertility and features important for plant nutrition

3. Explain the reception of plant nutrients, their forms and dynamics in the soil

4. Explain the role of certain essential macro and micronutrients and the effect of toxic elements

5. Describe the types of fertilizers with regard to their origin and purpose

6. Describe soil fertility control

7. Describe the procedure for determining the content of nutrients in the soil

8. Interpret the results of soil analysis

9. Explain the role of plant protection in plant production

10. Describe the main features of pests, disease agents of plants and weeds

11. Recognize the most important weeds in agricultural production

12. Describe plant protection measures

13. Identify the shortcomings of chemical measures in plant protection

14. Describe plant protection systems, especially the system of integrated protection and integrated plant production

15. Describe methods of forecasting the appearance of harmful organisms

16. Using the example of corn protection, describe the protection measures of an agricultural crop

Literature:

a) Obligatory for studying and preparing for exam:

- 1. Maceljski, M., (1999 ili 2002): Poljoprivredna entomologija, Zrinski, Čakovec
- 2. Glasilo biljne zaštite 5. 2007. Zaštita kukuruza
- 3. Tehnološke upute za integriranu proizvodnju ratarskih kultura za 2014. (Ministarstvo poljoprivrede, 2013.)
- 4. Škvorc, Ž., Čosić, T., Sever, K. (2014): Ishrana bilja, interna skripta. Šumarski fakultet, Šveučilište u Zagrebu.
- 5. V. Vukadinović, Z. Lončarić (2000): Ishrana bilja, knjiga i skripta-dostupna i na Internetu Poljoprivredni fakultet Osijek
 - b) <u>Supplementary:</u>
- 1. M. Poljak (2002): Fiziologija bilja, interna skripta, Agronomski fakultet u Zagrebu
- 2. Igrc Barčić, J., Maceljski, M.(2001): Ekološki prihvatljiva zaštita bilja od štetnika, Zrinski Čakovec
- 3. Lončarić, Z. i Karalić, K. (2015): Mineralna gnojiva i gnojidba ratarskih usjeva. Poljoprivredni fakultet u Osijeku.

Subject holder: Marijana Ivanek-Martinčić, Ph. D., college professor

VGUK VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240025	COSTS AND CALCULATIONS		ECTS credits: 5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Lidija Firšt Godek, M. Sc., senior lecturer Milan Suša, mag. Ing. agr.,assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: introduce the students with principles of costs and calculations for independent administration of various types of calculations in agricultural production as foundation for making business decisions **SUBJECT DESCRIPTION:** The subject enables the acquisition of basic knowledge of costs and calculations. Production costs will be discussed on examples of agricultural holdings. Shown by calculation for a certain agricultural production, as a basis for making business decisions.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to: 1. Explain the theory of production 2. Distinguish the basic terms from the theory of costs 3. Calculate material costs and depreciation 4. Show the movement of fixed and variable costs in agricultural production 5. Define basic concepts, principles, types and methods of calculations 6. Calculate the analytical and variable cost coverage calculation 7. Explain the financial results of the business using a calculated example 8. Solve the price calculation for the economic analysis 9. Independently present your own business plan

Literature:

Obligatory:

Grgić Z., (2012): Management u poljoprivredi, interna skripta za studente Veleučilišta u Kninu, Zagreb Grgić Z., (2006.): Troškovi i kalkulacije. Repetitorij za studente Agronomskog fakulteta, Zagreb Karić M., (2002): Kalkulacije u poljoprivredi. Poljoprivredni fakultet u Osijeku. Grupa autora (2012): Katalog kalkulacija poljoprivredne proizvodnje. HZZPSS, Zagreb. Grupa autora (2007): Katalog kalkulacija tradicijskih poljoprivredno-prehrambenih proizvoda. HZZPSS, Zagreb.

Supplementary:

Kay, R. D., Edwards, W. M. (2004): Farm menadžment, McGraw-Hill, Inc., New York. Nicholas C.siropolis (1995): Menadžment malog poduzeća. 4. izdanje Mate d.o.o. Zagreb Jelavić A.,i sur. (1995): Ekonomika poduzeća. Ekonomski fakultet, Zagreb. (odabrana poglavlja)

> Subject holder Lidija Firšt Godek, M. Sc., senior lecturer



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 45	AGRICULTURAL FINANCING FORMS		ECTS credits: 5
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Silvije Jerčinović, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		15	

SUBJECT OBJECTIVE: enable the students to independently evaluate and select the most beneficial form of financing for launching of business undertaking in the segment of agricultural entrepreneurship.

SUBJECT DESCRIPTION: To enable students to be able to independently evaluate and choose the most suitable form of financing for starting a business venture in the field of agricultural entrepreneursh

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Explain the significance of financial institutions and their products/services for the entrepreneurial			
process.			
2. To identify financial instruments suitable for financing entrepreneurial ventures in agriculture.			
3. Explain the role of individual financial institutions in starting a business venture			
4. Propose the optimal financial instrument in the creation of business plans.			
5. Draw up a financing plan within the framework of the business plan			
6. In accordance with the business idea, propose a source of financing and a financial institution that will implement it.			

Literature:

M. Gregurek, N. Vidaković, (2013), Bankarsko poslovanje, Zagreb, Effectus
D. Gulin, B. Tušek, L. Žager, (2004), Poslovno planiranje, kontrola i analiza, Hrvatska zajednica računovođa i financijskih djelatnika, Zagreb
Izravna plaćanja u poljoprivredi, http://www.apprrr.hr/izravna-placanja-2016-1840.aspx
Program ruralnog razvoja RH 2014-2020, http://www.apprrr.hr/mjera
Leko, V. (2005): Novac, bankarstvo i financijska tržišta, Adverta, Zagreb
Leko, V. (2004): Financijske institucije i tržišta, Mikrorad, Ekonomski fakultet
Siropolis, N. S. (1995): Menadžment malog poduzeća, Zagreb: Mate.
Poslovni plan poduzetnika/ urednik Vladimir Žanić, (2003.), Zagreb, Masmedia.

Subject holder:

Silvije Jerčinović, Ph. D., college professor

VGUK *+*	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 240027	ENTREPRENEURSHIP IN AGRICULTURE		ECTS credits: 4
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Krunoslav Škrlec, Ph. D., college professor Kristina Svržnjak, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		15	
Practical training		15	

SUBJECT OBJECTIVE: introduce the students with principles of entrepreneurship, elaboration of business plan of entrepreneurial undertaking with reference to examples of good practice in agriculture.

SUBJECT DESCRIPTION: Entrepreneurship as an economic activity nowadays is an indispensable part of any segment of the economy. Consequently, entrepreneurship cannot and must not be bypassed even in agriculture. It is through this subject that the role of entrepreneurship in business will be presented and all important parts of the theory and best practices of entrepreneurship will be analyzed through the knowledge, skills and experience of entrepreneurial projects.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Define an entrepreneurial project

2. Differentiate entrepreneurial strategies

3. Distinguish the segments of entrepreneurship that influence the realization of the project undertaking

4. Explain the term entrepreneurial project environment

5. Anticipate the risks that arise during the implementation of the business plan

6. Apply adequate methods, tools and appropriate information technology when creating a business plan

7. Compare business projects through the creation of a business plan

Literature:

Obligatory for studying and preparing for exam:

- 1. Primjenjeno poduzetništvo, grupa autora, Zagreb, 2006.
- 2. Škrtić, M., Mikić, M.: Poduzetništvo, Zagreb, 2011.
- 3. Čerić, V., Varga, M. I Birolla, H.: "Poslovno računarstvo", Znak, Zagreb, 1998.

- <u>Supplementary:</u> 1. Šošić, I.: "Metode poslovnog prognoziranja", serija članaka u Ekonomskom analitičaru.
- 2. Render, B.: "Quantitative Analysis for Management", New York, 2003.

Subject holder: Krunoslav Škrlec, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 94405	RURAL DEVELOPMENT		ECTS credits: 4
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Kristina Svržnak, Ph. D., college professor Sandra Kantar, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: Introduce the students with the basic notions and concept of rural development in the Republic of Croatia.

SUBJECT DESCRIPTION: To acquaint students with the basic terms and concept of rural development in the Republic of Croatia.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain basic concepts from the field of rural development

2. Distinguish the basic characteristics of rural areas

3. List the basic economic activities in rural areas

4. Describe the roles of individual institutions in the function of rural development and the actors who promote rural development in the chosen rural environment

5. Based on the SWOT analysis, identify critical factors in the rural area

6. Predict which measure and application for the project could be used to solve the observed critical factors in the rural area

7. Differentiate between projects and measures aimed at rural development

8. Express clearly and with arguments about your views related to the topics of rural development

9. Present own research results to a wider audience.

Literature:

Obligatory for studying and preparing for exam:

- 1. Cifrić, I. (2003): Ruralni razvoj i modernizacija. Prilozi istraživanju ruralnog identiteta.IDIZ, Zagreb.
- 2. Ćorić, G. i sur. (2020): Priručnik za ruralni razvoj pomoću mobilnih ruralnih hubova, LAG Međimurski doli i bregi, Čakovec.
- 3. A strategy for rural development in Croatia (2004-2010). UN FAO, Ministry of agriculture and forestry. Zagreb, 2003.
- 4. Grahovac (2005): Ekonomika poljoprivrede, Golden marketing. (odabrana poglavlja)

Supplementary:

- 1. Sociologija sela / Sociologija prostora časopis za istraživanje prostornoga i sociokulturnoga razvoja. Zagreb: IDIS.Odabrani tekstovi uz pojedine nastavne jedinice
- Bacsi, Z., Kovacs, E. (2007): Razvojne karakteristike prekograničnih regija, Mikroregionalna multifunkcionalna i razvojna asocijacija Keszthely – Heviz i Zapadnobalatonska radionica za društveno – znanstvena istraživanja, Keszthely (odabrana poglavlja).

Subject holder: Kristina Svržnjak, Ph. D., college professor



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: obligatory Code: 240028	TRADE AND DISTRIBUTION OF AGRI-FOOD PRODUCTS		ECTS credits: 4
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Dušanka Gajdić, univ. spec. oec., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		15	
Practical training		15	

SUBJECT OBJECTIVE: introduce the students with the basic notions of market and trade, trade institutions and business processes, participants and distribution channels and specificities of market and distribution of agricultural products.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with the basic concepts of market and trade, trade institutions and trade business processes, participants and distribution channels as well as the specifics of the market and distribution of agricultural and food products.

LEARNING OUTCOMES

	LEARNING OUTCOMES
	After completed exam the student will be able to:
1.	Explain key concepts from the field of market, trade and distribution.
2.	Classify retail and wholesale second-hand units and special institutions of the market economy.
3.	Define the concept, tasks, meaning and functions of trade and basic trade business processes.
4.	Give an example of a product range.
5.	Differentiate individual distribution channels and the advantages and disadvantages of individual
	channels.
6.	Identify the basic legal regulations that regulate business operations in the trade
7.	Distinguish the basic specificities of the market and distribution channels of agricultural and food
	products
	Explain the role and importance of agricultural production and trade in agricultural and food products in
8.	the foreign trade exchange of the Republic of Croatia.
9.	Apply the acquired knowledge to independently create an entrepreneurial business plan for an
	agricultural farm (result of a successfully solved integrated task as part of professional practice)
10.	Present your own research results according to a given topic to a wider audience

Literature:

Obligatory for studying and preparing for exam:

- 1. Cingula, M., Hunjak, T., Ređep, M. (2004): Poslovno planiranje s primjerima za investitore, RRiF, Zagreb
- 2. Gajdić, D. (2018): Tržište i distribucija poljoprivredno-prehrambenih proizvoda: kratki lanci opskrbe hranom Skripta za internu upotrebu, VGUK
- 3. Kolega, A., Božić, M. (2001): Hrvatsko poljodjelsko tržište, Tržništvo Zagreb, Zagreb (odabrana poglavlja)
- 4. Segetlija, Z. (2006): Trgovinsko poslovanje, Ekonomski fakultet Osijek (odabrana poglavlja)
- 5. Segetlija, Z. (2006): Distribucija, Ekonomski fakultet Osijek (odabrana poglavlja)
- 6. Tolušić, Z. (2012): Tržište i distribucije poljoprivredno-prehrambenih proizvoda, Poljoprivredni fakultet u Osijeku
- 7. Materijali s predavanja

Supplementary:

- 1. Baban, Lj.: Tržište, II. izdanje, školska knjiga, Zagreb, 1991.
- 2. Bilen, M.: Tržišta proizvoda i usluga, peto, dopunjeno i prošireno izdanje, Mikrorad d.o.o., Zagreb, 2011.
- 3. Kolega, A.: Tržništvo poljodjelskih proizvoda, Nakladni zavod Globus, Zagreb, 1994.
- 4. Kovačić, D.: Izravna prodaja seljačkih proizvoda, Agrarno savjetovanje, Zagreb, 2005.
- 5. Krešić, G.: Trendovi u prehrani, Fakultet za menadžment u turizmu i ugostiteljstvu, Opatija
- 6. Matić, B.: Vanjskotrgovinsko poslovanje, Sinergija nakladništvo d.o.o., Zagreb, 2004.
- 7. ... Hrvatska gospodarska komora HGKINFO, publikacije bilteni
- 8. ... Publikacije, strategije i poljoprivredno zakonodavstvo sa Internet stranica Ministarstva poljoprivrede, ribarstva i ruralnog razvoja (<u>www.mps.hr</u>) i Ministarstva vanjskih poslova i europskih integracija (<u>www.mvpei.hr</u>)

In Krizevci, September 2022

Subject holder: Dušanka Gajdić, univ. spec. oec., senior lecturer

NGUR VGUR	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 38856	AGRICULTURAL POLICY		ECTS credits: 2
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: VI
Teachers and associates:		Kristina Svržnjak, Ph. D., college professor	
		Hours	
Lectures		15	
Exercises and seminars		15	
Practical training		-	

SUBJECT OBJECTIVE: Introduce the students with the influence of agricultural policy on development of agriculture and rural development in Croatia.

SUBJECT DESCRIPTION: To acquaint students with the impact of agrarian policy on the development of agriculture and rural development in Croatia.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Define and explain agricultural policy as strategic policy in the Republic of Croatia

2. Recognize basic components of agricultural policy and basic regularities which refer to agricultural and rural development

3. Use the ICT system TISUP

4. Differentiate various support programs in agriculture and rural development programs on the national level and on the level of local self-government

5. Elaborate SWOT analysis related to agricultural production or rural development

6. Assess implementation of objectives and measures of agricultural policy

7. Express clear and substantiated opinions related to the implementation of objectives and measures of agricultural policy

⁹ Dertisingto in toor

8. Participate in team work9. Present own results to the wider audience

Literature:

<u>Obligatory:</u>

1. Petrač, B., (2002.): Agrarna ekonomika, Ekonomski fakultet u Osijeku i Poljoprivredni fakultet u Osijeku, Osijek (poglavlje agrarna politika)

Supplementary:

2. Publikacije, strategije i poljoprivredno zakonodavstvo s Internet stranica Ministarstva poljoprivrede (www.mps.hr)

In Krizevci, September 2022

Subject holder: Kristina Svržnjak, Ph. D., college professor

NGUR	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1BEO COM	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: obligatory Code: 215008	FINAL PRACTICAL TRAINING		ECTS credits: 18
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: VI
Teachers and associates:		Silvije Jerčinović, M. Sc., senior lecturer Krunoslav Škrlec, Ph. D., college professor Mentor of practical training at the University Mentor of practical training outside university	
		Hours	
Lectures		-	
Exercises and seminars		-	
Practical training		420	

SUBJECT OBJECTIVE: apply and extend acquired knowledge and skills in real work environment, register observations and elaborate critical review or administer research for elaboration of final thesis

SUBJECT DESCRIPTION: apply and improve acquired knowledge and skills in a real work environment, record observations and make a critical review and/or conduct research for the preparation of a final paper.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

- 1. Describe the activity and organizational structure at the place of practice
- 2. Apply the acquired theoretical knowledge needed at the place of practice
- 3. Perform specific tasks under supervision or independently
- 4. To solve a given problem in known circumstances
- 5. Take a critical look at the tasks performed at the place of practice and, if necessary, suggest improvements
- 6. Effectively participate in teamwork
- 7. Make decisions independently
- 8. Show better communication skills
- 9. It is better to express oneself in writing and orally

EXTERNAL ASSESSMENT – assessment of students' work during administration of practical training; Report – assessment of practical training report; Defence of practical training report

Subject holder: Silvije Jerčinović, M. Sc., senior lecturer



Subject: elective	EXPLOITATION AND MAINTENANCE OF FARM		ECTS credits: 4
Code: 38887	MACHINERY		
Drofossional study	PLANT PRODUCTION		
Professional study	LIVESTOCK RAISING		Semester: III
programme	MANAGEMENT IN AG	RICULTURE	
		Miomir Stojnović, M. Sc., senior I	ecturer
Teachers and associates:		Vlado Kušec, M. Sc., senior lecturer	
		Marija Jakuš Hrestak, mag. ing. ag	gr., assistant
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to gain competences, knowledge and skills for efficient and rational exploitation of farm machinery and their adequate maintenance.

SUBJECT DESCRIPTION: Operation and maintenance of farm machinery aims to train students to acquire competencies, knowledge and skills for efficient and rational exploitation of farm machinery and their proper maintenance.

LEARNING OUTCOMES AND ASSESSMENT METHOD

LEARNING OUTCOMES After completed exam the student will be able to: 1. Correctly select and rationally use tractor-machine aggregates

2. Calculate the productivity of aggregate work

3. Create technology maps and calendars for the use of tractors and attachment machines

4. To design mechanization for a certain scope and structure of agricultural production

5. Interpret the rules of technical maintenance of tractors and agricultural machines

6. Interpret the rules of periodic service maintenance of tractors and coupling machines

Literature:

a. Obligatory:

- 1. Beštak T. (1982): Eksploatacija traktorsko-strojnih agregata, Zagreb
- 2. Brčić J. (1964): Mehanizacija u stočarstvu, I i II dio, Sveučilište u Zagrebu, Zagreb
- 3. Emert R., Jurić T., Filipović D., Štefanek E. (1995): Održavanje traktora i poljoprivrednih strojeva, Osijek
- 4. Ivanković, A., Filipović, D., Mustać, I., Mioč, B., Luković, Z., Janječić, Z. (2016): Objekti i oprema u stočarstvu, Sveučilište u Zagrebu, Agronomski fakultet, Zagreb
- 5. Zimmer R., Banaj Đ., Brkić D., Košutić S. (1997): Mehanizacija u ratarstvu, Osijek

b. <u>Supplementary</u>

- 1. Aktualni zadaci mehanizacije poljoprivrede, Zbornici radova
- 2. Dlg-test de, Das Net-Magazin Für Landtechnik

Subject holder: Miomir Stojnović, M. Sc., senior lecturer



Subject: elective Code: 135050	MEDICINAL AND AROMATIC PLANTS		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Renata Erhatić, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to independently organise production or provide advice on cultivation of medicinal and aromatic herbs.

SUBJECT DESCRIPTION: Through the course "Medicinal and Aromatic Plants", students are introduced to the general and specific features of medicinal and aromatic herbs. Certain families of medicinal and aromatic species grown in Croatia, some wild medicinal species and certain families of exotic medicinal species are included. The teaching units are elaborated from systematics, knowledge of morphological and biological properties, cultivation technology to use. During the exercises in the practicum of the University of Economics, students will get to know the most important medicinal and aromatic species through direct contact, and during the field lesson they will learn about the organization of production on a family farm. Exams are taken through partial knowledge tests or a final exam.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain the importance and use of medicinal plants

2. Describe the main commercial types of medicinal and aromatic plants (LJAMB)

3. Describe the cultivation technology of certain types of LJAMB

4. Assess the possibility of growing the main commercial types of LJAMB with regard to agro-climatic conditions

5. To propose the use of LJAMB types depending on the active substances

Literature:

- a) <u>Obligatory for studying and preparing for exam:</u>
 - 1. Šilješ I, Grozdanić Đ., Grgesina I. (1992): Poznavanje, uzgoj i prerada ljekovitog bilja. Školska knjiga, Zagreb.
 - Stepanović, B., Radanović, D., Turšić, I., Nemčević, N., Ivanec, J. (2009). Uzgoj ljekovitog i aromatičnog bilja. Jan-Spider, Pitomača
 - 3. Willfort, R. (2002). Ljekovito bilje i njegova upotreba. Erudit d.o.o., Zagreb
 - 4. Grdinić V., Kremer D. (2009). Ljekovito bilje i ljekovite droge: farmakoterapijski, botanički i farmaceutski podaci, Hrvatska ljekarnička komora, Zagreb
 - 5. Erhatić R. (2017). Egzotične ljekovite biljne vrste, interna skripta
 - 6. Kremer D. (2018). Ljekovito bilje Farmaceutskog botaničkog vrtra "Fran Kušan", Denona d.o.o., Zagreb
 - 7. Žutić I. (2007). Lavanda, kadulja i komorač u kontinentalnom području. Sveučilište u Zagrebu Agronomski fakultet

b) Supplementary:

- 1. Grlić, Lj. (1990). Enciklopedija samoniklog jestivog bilja. August Cesarec Zagreb
- 2. Domac, R. (2002). Flora Hrvatske. Školska knjiga Zagreb
- 3. Knežević, M. (2006). Atlas korovne, ruderalne i travnjačke flore. Sveučilište Josipa Jurja Strossmayera u Osijeku. Poljoprivredni fakultet u Osijeku
- 4. Toplak Galle, K. (2005). Domaće ljekovito bilje. Mozaik knjiga Zagreb
- 5. Lesinger, I. (2006). Liječenje otrovnim biljem. Sveučilišna knjižnica Rijeka
- Parađiković, N. (2014): Ljekovito i začinsko bilje. Nastavni materijal za modul Ljekovito i začinsko bilje. Sveučilište Josipa Juraja Strossmayera u Osijeku. Poljoprivredni fakultet u Osijeku.
- Vukobratović, Ž., Vukobratović, M., Lončarić, Z., Sikora S., Erhatić, R., Svržnjak, K. (2015): Korištenje kompostiranog biorazgradivog komunalnog otpada u održivoj poljoprivrednoj proizvodnji. Priručnik s rezultatima istraživanja. VIP projekt. Republika Hrvatska. Ministarstvo poljoprivrede.
- Srečec S., Kremer D., Benković M., *i sur*. (2020.) Taksonomija, ekologija i uporaba rogača (Ceratonia siliqua L.) i lovora (Laurus nobilis L.) u Hrvatskoj. Tomić, F. i Peklić, I. (urednici). (znanstvena monografija) Zagreb, Križevci, Hrvatska akademija znanosti i umjetnosti. [ISBN 978-953-347-348-2]

UGUR TBGO	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code: 38903	BUSINESS ENGLISH LANGUAGE		ECTS CREDITS: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Valentina Papić Bogadi, Ph. D., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: development of basic language skills with emphasis on language for specific purposes; train the students for oral and written communication in a foreign language, train the students to present themselves and their company in a foreign language.

SUBJECT DESCRIPTION: developing basic language skills with an emphasis on the language of the profession; training students for oral and written business communication; training students to independently present themselves and/or the company in a foreign language.

LEARNING OUTCOMES

After attending classes and completing obligations the students will be able to use basic elements and forms of business language, prepare basic documents of business communication based on provided sample, analyse authentic business materials in a foreign language, administer business phone call, hold a presentation, present themselves within a job interview, contact foreign company etc. Expected level in line with the European gualification framework of reference: reading: B2; listening B2, writing B1, speaking B1.

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Compile a business letter, business e-mail, purchase order, invoice, etc.

2. Use basic language rules according to the given template

3. Create a presentation of the company / institution in a foreign language

4. Compose a resume and a job application

5. Actively use language laws and specific vocabulary in discourse

6. Use specific vocabulary related to a job interview

7. Use learned expressions in combination with communication skills in active language production

Literature:

a) Obligatory for studying and preparing for exam:

Selected materials:

Cotton; Favley, Kent: Intermediate MARKET LEADER, subject book and practice file, Pearson, 2012

b) Supplementary:

MacKenzie, I. (2002) English for Business Studies, CUP Powell, M. (2009): In company, second edition, MacMillan Powell, M. (2004) New Business Matters. Thomson Heinle. Emmerson, P. (2002) Business Grammar Builder, Macmillan Murphy. Essential Grammar in Use (internediate). Cambridge University Press Strutt, P. (2000) Business Grammar in Usage, Longman Jednojezični poslovni rječnici (Longman, OUP, ...) Dvojezični poslovni rječnici (Špiljak-Ivir, Zgombić, ...)

> Subject holder: Valentina Papić Bogadi, Ph. D., senior lecturer

UGUR TBBO	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code: 38904	BUSINESS GERMAN LANGUAGE		ECTS CREDITS: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Valentina Papić Bogadi, Ph. D., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: development of basic language skills with emphasis on language for specific purposes; train the students for oral and written communication in a foreign language, train the students to present themselves and their company in a foreign language.

SUBJECT DESCRIPTION: "Business German" is conducted in the form of lectures, exercises and seminars in the form of 30 + 20 + 10. The lectures include language elements and forms related to business communication in a foreign language, such as arranging a meeting, telephone conversation, description companies, preparation of presentations, rules of business correspondence, rules of e-mail correspondence, etc. The exercises are focused on creating their own documents according to the given template, so as part of the exercises, students create a resume, a job application, an inquiry, an answer to an inquiry, an offer, a complaint and Fig. Professional practice is carried out in the form of group and individual visits to agricultural enterprises in the area of the city of Križevci

that have contacts with business partners from German-speaking countries, where students can actively use the skills learned through the analysis of authentic business documents in a foreign language. Lectures and exercises are held in a classroom, i.e. one of the halls of the college. As equipment and teaching aids, the lecturer uses a computer, projector, pictures, maps, audio-visual materials, powerpoint presentations, etc.

LEARNING OUTCOMES AND ASSESSMENT METHOD

After attending classes and completing obligations the students will be able to use basic elements and forms of business language, prepare basic documents of business communication based on provided sample, analyse authentic business materials in a foreign language, administer business phone call, hold a presentation, present themselves within a job interview, contact foreign company etc. Expected level in line with the European qualification framework of reference: reading: B2; listening B2, writing B1, speaking B1.

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Compile a business letter, business e-mail, purchase order, invoice, etc.

2. Use basic language rules according to the given template

3. Create a presentation of the company / institution in a foreign language

4. Compose a resume and a job application

5. Actively use language rules and specific vocabulary in discourse

6. Use specific vocabulary related to a job interview

7. Use learned expressions in combination with communication skills in active language production

8. Compile a business letter, business e-mail, purchase order, invoice, etc.

Literature:

a) <u>Obligatory for studying and preparing for exam:</u> Selected materials from the following literature: Klett Verlag: Unternehmen Deutsch Aufbaukurs – Lehrbuch und Übungsbuch

b) <u>S</u>	ipplementary:
Hueber: Alltag,	Beruf & Co. 1
-	Dialog Beruf 1
	Dialog Beruf 2
	Dialog Beruf 3
	Deutsch lernen für den Beruf
Klett:	Unternehmen Deutsch - Aufbaukurs
	Wirtschaftsdeutsch für Anfänger Grundstufe
	Wirtschaftsdeutsch für Anfänger Aufbaustufe
Schubert:	Exportwege 1 neu
	Geschäftliche Begegnungen
Langenscheidt:	Orientierung im Beruf, Neubearb. 2008
-	Wirtschaftsdeutsch von A – Z. Neubearbeit, 2008.

NGUK TBB0	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code: 161595	TRADE AND FOOD MARKETING		ECTS credits: 4	
Professional study	PLANT PRODUCTION		Semester: III	
programme	LIVESTOCK RAISING			
Teachers and associates:		Dušanka Gajdić, univ. spec. oec., senior lecturer		
		Silvije Jerčinović, Ph. D., college professor		
		Hours		
Lectures		30		
Exercises and seminars		30		
Practical training		-		

SUBJECT OBJECTIVE: enable the students to acquire knowledge and comprehend theory and analysis of market, distribution and marketing of food and relations on domestic and international food market.

LEARNING OUTCOMES

	LEARNING OUTCOMES		
	After completed exam the student will be able to:		
1.	Explain the concept, tasks, meaning, functions and subjects of the market of agricultural and food		
	products and trade institutions for buying and selling food		
2.	Identify the specifics of the food market in the Republic of Croatia Explain the supply and demand		
	factors of agricultural and food products		
3.	Explain the concept, tasks, meaning and functions of trade and basic trade business processes.		
4.	Give an example of the product range on a concrete example		

5.	Categorize the basic legal regulations that regulate business in the food trade
6.	Explain the importance and role of food information and food labeling in protecting the interests and
	safety of consumers.
7.	Explain the segmentation of the food market
8.	On a concrete example, design a marketing mix
9	Assess the role and importance of agricultural production and trade in agricultural and food products in
	the foreign trade exchange of the Republic of Croatia.
10.	Present your own research results according to a given topic to a wider audience
11.	Differentiate individual distribution channels and the advantages and disadvantages of individual
	channels.
12	Present your own research results according to a given tonic to a wider audience

Literature:

Obligatory:

- 1. Gajdić, D. (2018): Tržište i distribucija poljoprivredno-prehrambenih proizvoda: kratki lanci opskrbe hranom Skripta za internu upotrebu, VGUK
- 2. Tolušić, Z.: Tržište i distribucije poljoprivredno-prehrambenih proizvoda, Poljoprivredni fakultet u Osijeku, 2012.
- 3. Leko-Šimić, M. (2002): Marketing hrane (knjiga). Ekonomski fakultet u Osijeku, Osijek.
- 4. Kovačić, D.: Izravna prodaja seljačkih proizvoda, Agrarno savjetovanje, Zagreb, 2005.
- 5. Materijali s predavanja

Supplementary:

- 1. Kolega, A., Božić, M.: Hrvatsko poljodjelsko tržište, Tržništvo Zagreb, Zagreb, 2001.
- 2. Baban, Lj.: Tržište, II. izdanje, školska knjiga, Zagreb, 1991.
- 3. Krešić, G.: Trendovi u prehrani, Fakultet za menadžment u turizmu i ugostiteljstvu, Opatija, 2012.
- 4. Matić, B.: Vanjskotrgovinsko poslovanje, Sinergija nakladništvo d.o.o., Zagreb, 2004.
- 5. ... Hrvatska gospodarska komora HGKINFO, publikacije bilteni
- 6. ... Publikacije, strategije i poljoprivredno zakonodavstvo sa Internet stranica Ministarstva poljoprivrede, ribarstva i ruralnog razvoja (<u>www.mps.hr</u>) i Ministarstva vanjskih poslova i europskih integracija (<u>www.mvpei.hr</u>)
- 7. http://www.tisup.mps.hr/ TISUP Tržišni informacijski sustav u poljoprivredi
- 8. https://www.dzs.hr/ Državni zavod za statistiku (DZS)
- 9. <u>http://www.cmegroup.com/trading/agricultural/</u> CME Group Education
- 10. <u>http://faostat3.fao.org/browse/P/*/E</u> Food and Agriculture Organization of the United Nations- statistics division

Subject holder: Dušanka Gajdić, univ. spec. oec., senior lecturer



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 192573	BIOETHICS		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		Sandra Kantar, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: To acquaint students with an innovative bioethical approach to moral issues in the context of scientific and technical progress in modern society. The course aims to place special emphasis on bioethical topics in agriculture.

SUBJECT DESCRIPTION: The aim of the subject is to acquaint students with an innovative bioethical approach to moral issues in the context of scientific and technical progress in modern society. The course aims to place special emphasis on bioethical topics in agriculture.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Define and describe basic bioethical topics in contemporary society			
2. Interpret the importance of basic bioethical topics for contemporary society			
3. Analyze bioethical dilemmas on a concrete example and situation			

4. Highlight current bioethical topics and dilemmas imposed by scientific and technical progress in modern society or the current situation.

5. Encourage students to think critically and argue about current bioethical topics and form ethical attitudes

6. Demonstrate written and oral communication skills in the field of bioethics

7. Apply the acquired knowledge to the independent creation of thematic tasks

Literature:

Obligatory

- 1. Cifrić, I. (2007): Bioetička ekumena, Pergamena, Zagreb.
- 2. Cifrić, I. (2000): Bioetika i ekologija, Matica hrvatska, Zaprešić.
- 3. Čović, A. (2004): Etika i bioetika, Pergamena, Zagreb.
- 4. Grupa autora (2001): Bioetika u teoriji i praksi, Globus, Zagreb.
- 5. Jošt, M. (2016): (iz)um bez (raz)uma, Omega lan, Zagreb.

Supplementary:

- 1. Cifrić, I. (1989): Socijalna ekologija, Globus, Zagreb.
- 2. Engdahl, W. (2005): Sjeme uništenja. Geopolitika genetski modificirane hrane i globalno carstvo, Detecta, Zagreb.
- 3. Jošt, M. / Th. S. Cox, Th. S.(2003): Intelektualni izazov tehnologije samouništenja, Matica hrvatska, Križevci.
- 4. Kelam, I. (2015): Genetički usjevi kao bioetički problem, Pergamena, Zagreb.
- 5. Pavelić, K. Polšek, D. (ur.) (1999): Društveni značaj genske tehnologije (zbornik radova), IDZ Ivo Pilar, Zagreb.
- 6. Rinčić Lerga, Iva (2007): Bioetika i odgovornost u genetici, Pergamena, Zaprešić.
- Socijalna ekologija časopis za ekološku misao i sociologijska istraživanja okoline: Zagreb: HSD. Odabrani tekstovi uz pojedine nastavne jedinice.
- 8. Supek, R.(1989): Ova jedina zemlja, Globus, Zagreb.

Subject holder: Sandra Kantar, Ph. D., college professor



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 51	POULTRY RAISING		ECTS credits: 4
Professional study	PLANT PRODUCTION		Semester: III
programme	MANAGEMENT IN AGRICULTURE		
Teachers and associates:		Marijana Vrbančić Igrić, mag. ing. agr., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable students for independent organisation of production of eggs and poultry meat. **SUBJECT DESCRIPTION:** Enable students to independently organize the production of eggs and poultry meat.

LEARNING OUTCOMES

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Name breeds and hybrids of all types of poultry and describe exterior and production characteristics			
2. Calculate the composition of the fodder mixture for laying hens during egg production			
3. Calculate the composition of feed mixture for broilers in meat production			
4. Independently carry out the process of incubating chicken eggs			
5. Show ways of keeping poultry and compare them			
6. Use welfare measures in poultry farming			
7. Plan preventive health care			
8. Distinguish the code on eggs and compare it with the way of keeping poultry			
9. To organize the successful production of eggs and poultry meat			
10. Describe the feeding of all types of poultry			

Literature:

<u>Obligatory:</u>

- 6. Pintić V., Marija Meštrović (2004): Osnovi peradarstva. Skripta, II dopunjeno izdanje, Visoko gospodarsko učilište u Križevcima.
- 7. Senčić Đ. (2011): Tehnologija peradarske proizvodnje, Poljoprivredni fakultet u Osijeku, IBL Osijek.
- 8. Vučemilo M. (2008): Higijena i bioekologija u peradarstvu, Veterinarski fakultet Sveučilišta u Zagrebu, Zagreb.
- 9. Senčić Đ. (1994): Peradarstvo, Gospodarski list, Zagreb.
- 10. Uremović Ż., et.al. (2002): Stočarstvo, Agronomski fakultet Sveučilišta u Zagrebu.

Subject holder: Marijana Vrbančić Igrić, mag. ing. agr., senior lecturer



KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 115627	CONSERVATION AGRICULTURE		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: III
Teachers and associates:		lvka Kvaternjak, Ph. D., college professor Andrija Špoljar, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with management methods for intensifying sustainable agricultural production with emphasis on environment protection.

SUBJECT DESCRIPTION: The curriculum provides students with a basic understanding and importance of conservation agricultural production. Soil degradation processes as a result of conventional production and plant breeding interventions that enable sustainable use of natural resources with less negative impact on the environment and greater economic efficiency are dealt with. As part of the exercises, the emission of carbon dioxide during various plant growing procedures is determined and the conservation of moisture in the soil is calculated. **LEARNING OUTCOMES**

Literature:

a) Obligatory for studying and preparing for exam:

Baker, C.J., Saxson, K.E. (2009): No-tillage Seeding in Conservation Agriculture. Food and Agriculture Organization United Nations

Birkas, M. (2008): Environmentally-sound adaptable tillage. Akademia Kiado, Budapest.

Butorac, A. (1999): Opća agronomija. Školska knjiga, Zagreb.

Kisić, I., Bašić, F., Butorac, A., Messić, M., Nestroy, O., Sabolić, M. (2005): Erozija tla vodom pri različitim načinima obrade. Zagreb.

Špoljar, A. (2021): Konzervacija tla, Visoko gospodarsko učilište *Bilješke s predavanja

b) <u>Supplementary:</u>

Bašić, F., Herceg, N. (2010): Temelji uzgoja bilja. Sveučilište u Mostaru, Mostar.

Bašić, F. (2012): The soils of Croatia. Springer Dordrecht Heidelberg New York London.

Friedrich, T., Kassam, A., Corsi, S. (2014): Conservation Agriculture in Europe.

Kinyangi, J. (2007): Soil healt and soil quality: A rewiew. http://www.fao.org/documents

Morgan, R.P.C. (2005): Soil Erosion and Conservation. Australia

Nichols, K. (2011): Soil Quality Demonstrations and Procedures. Northern Great Plains Research Laboratory.

Špoljar, A., Tušek, T., Čoga, L. (2013): Onečišćenje okoliša, Visoko gospodarsko učilište u Križevcima, Križevci.

Subject holder: Ivka Kvaternjak, Ph. D., college professor
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Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 89019	CEREALS AND GRAIN LEGUMES		ECTS credits: 4
Stručni studij	LIVESTOCK RAISING		Semester: III
Teachers and associates:		Renata Erhatić, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with the basic principles of production of corn legumes in different production systems.

SUBJECT DESCRIPTION: The aim of the subject is to train students for the independent production of cereals, pseudocereals and grain legumes. As part of the performance program of the course, the most important small, millet and alternative cereals and grain legumes will be processed. Their economic importance, morphological and biological properties, origin, distribution, botanical systematics, agroorganic conditions for production and production technology will be described.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Explain the importance and use of cereals, pseudocereals and grain legumes

2. Describe the stages of growth and development and the morphological and biological properties of cereals, pseudocereals and grain legumes

3. Assess the possibility of growing certain cereals, pseudocereals and grain legumes related to agroorganic conditions

4. Choose agrotechnics for the production of cereals, pseudocereals and grain legumes, related to yield and quality

5. To analyze the correctness of the production of some cereal, pseudocereal or granular legume on the selected farm

Literature:

a) Obavezna

Gagro M. 1998. Žitarice i zrnate mahunarke. Hrvatsko agronomsko društvo, Zagreb Kovačević V., Rastija M. 2014. Žitarice. Poljoprivredni fakultet u Osijeku Gadžo D., Đikić M., Jovović Z., Mijić A. 2017. Alternativni ratarski usjevi. Univerzitet u Sarajevu Pospišil A., Pospišil M. (2013). Ratarstvo praktikum, Sveučilište u Zagrebu, Agronomski fakultet

b) Dopunska:

Jošt M i suradnici. 1988. Pšenica - Put do visokih prinosa. Polj. institut Križevci Tajnšek T. 1991. Koruza. Kmečki glas Ljubljana Jevtić S i sur. 1986. Posebno ratarstvo I, Nučna knjiga Beograd Henry R.J. and P.S. Kettlewell. 1996. Cereal grain quality.Chapman & Hill Časopisi: Agronomski glasnik, Poljoprivreda, Zbornici radova Vratarić M. i Sudarić A. 2000. Soja. Poljoprivredni institut Osijek Lešić R., Borošić J., Ćustić M., Poljak M., Romić D. (2002). Povrćarstvo. Zrinski, Čakovec

> Subject holder: Renata Erhatić, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 115626	LAND RECLAMATION AND SOIL PROTECTION		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Andrija Špoljar, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with principles, parameters and criteria for designing drainage and irrigation systems. The students will learn to design systems of surface and underground irrigation and calculate balance components of precipitation water in the soil and elaborate the project of rain fed irrigation. With the objective of sustainable soil management the students will also become familiar with sources, dynamics and retention of polluting agents in the environment, their integration in the food chain and consequences for the health of people and animals. Students will be able to give recommendations for recovery of polluted soil.

SUBJECT DESCRIPTION: The aim of the subject is to learn the principles, parameters and criteria for designing drainage and irrigation systems. Regarding sustainable soil management, students will also learn about the sources, movement and retention of pollutants in the environment, their entry into the food chain, and the consequences for human and animal health.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completing the exam the students will be able to:

1. Explain the basic determinants of drainage and irrigation, as well as the parameters and criteria for designing

2. Explain the basic determinants of sustainable soil management in accordance with the principles of sustainable agriculture,

3. Calculate drainage and irrigation parameters as part of the development of smaller projects,

4. Create tables, graphs and write a mini project

5. Calculate the amount of material for calcification and the amount of fertilizer needed for soil reclamation

6. Interpret the processes and consequences of soil damage

7. Write the measures for rehabilitating the damaged soil

8. To present the results publicly

Literature:

Obligatory for studying and preparing for exam:

Špoljar, A., Tušek, T., Čoga, T. (2011): Onečišćenje okoliša. Visoko gospodarsko učilište u Križevcima, udžbenik, Križevci.

Šimunić, I., Špoljar, A. (2007): Tloznanstvo i popravak tla (skripta), Visoko gospodarsko učilište u Križevcima, Križevci.

Šimunić, I., Špoljar, A., Tomislava Peremin Volf (2007): Vježbe iz tloznanstva i popravka tla (skripta), Visoko gospodarsko učilište u Križevcima, Križevci.

Supplementary:

Šimunić, I. (2013): Uređenje voda. Sveučilište u Zagrebu, Zagreb, 260 str.

Tomić, F. (1988): Navodnjavanje. Savez poljoprivrednih inženjera i tehničara Hrvatske i Fakultet poljoprivrednih znanosti Sveučilišta u Zagrebe, Zagreb.

Butorac, A. (1999): Opća agronomija. Školska knjiga, Zagreb.

***Društvo za odvodnjavanje i navodnjavanje Hrvatske (1987): Priručnik za hidrotehničke melioracije. Knjiga 4, Zagreb.

Subject holder: Andrija Špoljar, Ph. D., college professor



Edition:
April 2017
Code:
Annex 5/SOUK/A 4.3.1.

Subject syllabus

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 38141	ORGANIC AGRICULTURE		ECTS credits: 4
Professional study PLANT PRODUCTION			
programme	LIVESTOCK RAISING	LIVESTOCK RAISING	
programme	MANAGEMENT IN AGRICULTURE		
Teachers and associates:		Ivka Kvaternjak, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with the specificities and differences between organic and conventional agriculture in terms of fertilization, crop rotation, soil cultivation, plant protection and preservation of biological diversity.

SUBJECT DESCRIPTION: The subject of Organic agriculture, as an acceptable alternative to conventional agriculture, provides students with basic knowledge about this production system. Basic definitions, principles and directions are studied. Methods, methods and valid standards in organic farming in the Republic of Croatia are covered. Emphasis is placed on the effect of this production system on the quality of the soil and the environment, as well as the differences compared to conventional agricultural production. The procedures for certification of organic products are also processed. As part of the exercises, a plan for transitioning from conventional to organic production is drawn up.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Define organic agriculture, basic goals and advantages and disadvantages

2. Describe directions within organic agriculture and international organizations dealing with organic agriculture

3. Distinguish between conventional and organic agriculture

- 4. Explain organic fertilization and fertilization in biodynamic production
- 5. Describe the standards in organic and biodynamic production

Literature:

Obligatory for studying and preparing for exam:

- 1. Znaor, D. (1996): Ekološka poljoprivreda, Nakladni zavod Globus, Zagreb.
- 2. Kisić, I.: Ekološka poljoprivreda (pisana predavanja)
- 3. Kisić, I. (2012): Uvod u ekološku poljoprivredu
- 4. Bilješke s predavanja

Supplementary:

 Rudolf Steiner (1924): Poljoprivredni tečaj, prijevod njemačkog originalnog izdanja "Geisteswissenschaftliche Grundlagen zum Gedeihen der Landwirtschaft — Landwirtschaftlicher Kursus" koje je objavio Rudolf Steiner.
 Bruno Motik i sur.(2014) : Permakulturni dizajn, Priručnik uz tečaj.

> Subject holder: Ivka Kvaternjak, Ph. D., college professor



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 30	BEEKEEPING AND HONEY-MAKING PLANTS		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Tatjana Tušek, Ph. D., college professor Siniša Srečec, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		23	
Practical training		7	

SUBJECT OBJECTIVE: enable the student for independent production of quality honey and other bee products and placement of products on increasingly demanding market.

SUBJECT DESCRIPTION: Beekeeping and honey-making plants is an optional subject for students studying Agriculture. Within the "Beekeeping" part of the course, the implementation program covers new knowledge from bee biology, breeding and selection of bees, health status of bee colonies, beekeeping technology, exemption and placement of bee products, new requirements in the registration of bee farms related to entry into the EU. Part of the subject "Honey plants" deals with the honey plants of the Republic of Croatia, the climatic conditions of honey production and pollen production, the main pastures and legal prerequisites for the use of bee pastures.

LEARNING OUTCOMES

 LEARNING OUTCOMES

 After completed exam the student will be able to:

 1. Describe the specifics of the structure of bees and the life cycle of a bee colony

- 2. Assess the biological status of the bee colony
- 3. Classify hives for a certain type of beekeeping (stationary, migratory, conventional, ecological)
- 4. Enumerate beekeeping products
- 5. Differentiate honey plants and honeying periods and judge the necessary activities in migratory beekeeping with the natural cycles of wild plants
- 6. Distinguish bee diseases
- 7. Explain the legal regulations in beekeeping
- 8. Explain the preparation of apiaries for specific beekeeping production

Literature:

Obligatory for studying and preparing for exam:

- 1 Belčić, J. (1978): Od početnika do naprednog pčelara, Podravka, Koprivnica.
- 2 Ibrahim Mujić, Vildana Alibabić i Dajana Travljanin (2014): Prerada meda i drugih pčelinjih proizvoda (med, pelud, propolis, matična mliječ, vosak i pčelinji otrov). Prof. dr. sci. Ibrahim Mujić, Rijeka.
- 3 Laktić, Z., D. Šekulja (2008): Suvremeno pčelarstvo. Nakladni Zavod Globus, Zagreb.
- 4 Tucak, Zvonimir, T. Bačić, S. Horvat, Z. Puškadija (1999):U: Pčelarstvo. Poljoprivredni fakultet Osijek, Sveučilišta J. J. Strossmayera u Osijeku.
- 5 Turnšek, W. (1996): Dnevnik pčelarskih radova, Zagrebačka izdavačka novinska agencija d.o.o., Zagreb.

Supplementary:

- 1. Marković, J., Ljerka Zeba, Đ. Sulimanović (1994): Počeci uspješnog pčelarenja. «PIP», Zagreb.
- Sulimanović, Đ., Ljerka Zeba, J. Marković (1995): Prepoznavanje i suzbijanje pčelinjih bolesti »PIP», Zagreb.
- 3. WEB sites

Subject holder: Tatjana Tušek, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 38888	FARM ORGANIC WASTE MANAGEMENT		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Ivka Kvaternjak, Ph. D., college professor Dejan Marenčić, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students for sustainable management of organic waste in crop production and livestock breeding without negative effects on soil, water, air and health of people. **SUBJECT DESCRIPTION:**

LEARNING OUTCOMES
After completed exam the student will be able to:
1. Use the professional terminology of by-products/waste management
Describe the ways of disposing of different types of organic waste
3. Explain the possibility of using agricultural by-products as compost i substrate for the production of
alternative forms of energy
4. Describe measures for managing by-products and organic waste in accordance with good
agricultural practice
5. Calculate the amount of nutrients in the by-products of livestock farms

6. Plan the dimensions of the canal and the manure pit for the disposal of organic fertilizers

Literature:

Obligatory:

- 1. Butorac A. (1999): Opća agronomija. Školska knjiga, Zagreb.
- 2. Vukadinović V., Lončarić Z. (1998): Poljoprivredni fakultet u Osijeku, Osijek
- 3. Al Seadi Teodorita i sur. (2008): Biogas for Eastern Europe
- 4. *Bilješke s predavanja

Supplementary:

- 1. Brčić J. (1964): Mehanizacija u stočarstvu. Sveučilišna naklada Liber. Zagreb, I i II dio.
- 2. DLG-test. de, Das Net Magazin für Landtechnik
- 3. http://cwmi.css.cornell.edu (2003): Considerations for Dairy Farms regarding Use of Sewage Sludges, Sludge Products and Septage
- 4. http://muextension.misouri.edu (2006): Swine manure management Systems in Missouri

Subject holder: Ivka Kvaternjak, Ph. D., college professor



Subject syllabus

Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 135051	RURAL TOURISM		ECTS credits: 4
Professional study	PLANT PRODUCTION		
programmo	LIVESTOCK RAISING		Semester: IV
programme	MANAGEMENT IN AG	RICULTURE	
		Kristina Svržnjak, Ph. D., college professor	
Teachers and associates:		Sandra Kantar, Ph. D., college professor	
		Silvije Jerčinović, Ph. D., college p	professor
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: acquire theoretical and practical knowledge from the field of rural tourism **SUBJECT DESCRIPTION:** To acquire theoretical and practical knowledge of rural tourism.

LEARNING OUTCOMES			
After completed exam the student will be able to:			
1. Explain basic terms from the field of rural tourism			
2. Distinguish the forms of rural tourism			
3. Connect rural tourism with economic and rural development			
4. Differentiate the symbols of the offer through pictograms for rural tourism farms			
5. To compare the elements of originality and ambience of an agro-tourism location and an agro-tourism			
facility			
6. Criticize the rural interior and exterior of agritourism facilities			

7. Identify the basic elements of the marketing mix in rural tourism

8. Differentiate between different promotional options and elements of the promotional mix that are used for rural tourism purposes

9. List the institutions in the function of rural tourism development.

10. Classify accommodation and catering facilities.

11. Use research methods at an agrotourism facility or agrotourism location. 12. Present your own research results to a wider audience

Literature:

Obligatory for studying and preparing for exam:

- 1. Svržnjak, Kristina, Kantar, Sandra, Jerčinović, S., Kamenjak, D.: Ruralni turizam uvod u destinacijski menadžment, Visoko gospodarsko učilište u Križevcima, Križevci, 2014.
- 2. Ružić, P.: Ruralni turizam, Institut za poljoprivredu i turizam Poreč, Pula, 2009.

Supplementary:

- 1. Galičić, V., Laškarin, Marina: Putevi do zadovoljnoga gosta, Fakultet za menadžment u turizmu i ugostiteljstvu Opatija, Opatija, 2011.
- 2. Demonja, D., Ružić, P.: Ruralni turizam u Hrvatskoj s hrvatskim primjerima dobre prakse i europskim iskustvima, Meridijani, Zagreb, 2010.

Subject holder: Kristina Svržnjak, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code:	BREEDING, HEALTH AND WELFARE OF HORSES		ECTS credits: 4
PLANT PRODUCTION			
	LIVESTOCK RAISING	LIVESTOCK RAISING	
programme	MANAGEMENT IN AGRICULTURE		
Teachers and associates:		Damir Alagić, Ph. D., college professor	
		Hours	
Lectures		40	
Exercises and seminars		20	
Practical training		-	

SUBJECT OBJECTIVE: To acquaint students with the basics of anatomy, physiology and ethology and the wellbeing of horses, to recognize the most important breeds of horses and the possibility of differentiating basic breeding models. To recognize the basic systems of accommodation and use of horses, to explain certain health issues in equestrian facilities. To acquaint students with the most common diseases and injuries of horses and with the prevention and possible therapy of certain diseases.

SUBJECT DESCRIPTION: During the teaching process, the basic physiological processes will be explained to the students and the basic elements, bones, skeleton and muscles of horses will be practically demonstrated. Students will be shown the most important differences between warm-blooded and cold-blooded horse breeds and the possibility of differentiating basic breeding models. They will recognize the basic systems of accommodation and use of horses, explain some health problems in equestrian facilities. To acquaint students with the most common diseases and injuries of horses and with the prevention of certain diseases. Examples of basic factors affecting the welfare and protection of animals and conditions that conflict with the welfare of horses will be given. Examples of disorders in horse behavior will be explained and congenital and acquired forms of behavior will be described.

After completed exam the student will be able to:

- 1. Explain the significance and specifics of this animal species.
- 2. Distinguish the most important horse breeds in Croatia and in the world.
- 3. List and describe the characteristics of the horse's structure and physiological or pathological status.
- 4. Evaluate horse behavior and distinguish between physiological and pathological forms of horse behavior.
- 5. Recognize conditions contrary to the horse's well-being.
- 6. Organize a feeding plan for different categories of horses, describe different ways of housing horses.
- 7. Recognize and describe the most important invasive and infectious diseases in horses.
- 8. Define the causes of the most common reproductive disorders.

Literature:

Obligatory

- 1. Babić, K., Herak, M., Tušek, T. (2003): Anatomija i fiziologija domaćih životinja, Visoko gospodarsko učilište u Križevcima, Čakovec. (udžbenik).
- 2. Ivanković, A. (2004): Konjogojstvo. Hrvatsko agronomsko društvo, Zagreb. (udžbenik)
- 3. Pavičić, Ž., Ostović, M. (2019): Dobrobit životinja, Sveučilište u Zagrebu, Zagreb. (udžbenik)
- 4. Rupić, V. (2015): Reprodukcija domaćih životinja, Zrinski d.d., Čakovec. (udžbenik)

Supplementary

- 1. Asaj, A. (2003): Higijena na farmi i u okolišu, Medicinska naklada, Zagreb.
- 2. Brinzej, M. (1980): Konjogojstvo, Školska knjiga, Zagreb.
- 3. Domaćinović, M. (2006.): Hranidba domaćih životinja. Poljoprivredni fakultet u Osijeku, Sveučilište J.J. Strossmayera u Osijeku. Osijek.
- 4. Domaćinović, M., Antunović, Z., Džomba, E., Opačak, A., Baban, M., Mužic, S. (2015): Specijalna hranidba domaćih životinja. Osijek: Poljoprivredni fakultet u Osijeku, (udžbenik)
- Kralik, G., Adámek, Z., Baban, M., Bogut, I., Gantner, V., Ivanković, S., Katavić, I., Kralik, D., Kralik, I., Margeta, V., Pavličević, J. (2011.): Zootehnika. Poljoprivredni fakultet u Osijeku, Sveučilište J. J. Strossmayera u Osijeku. Osijek.
- 6. Grupa autora (2012): Veterinarski priručnik. Medicinska naklada, Zagreb
- 7. Makek, Ž., Getz, I., Prvanović, N., Tomašković, A., Grizelj, J. (2009): Rasplođivanje konja, Veterinarski fakultet sveučilišta u Zagrebu, Zagreb. (udžbenik).
- 8. Margić, J., Matanović, K. (2011.): Dobrobit konja-smještaj i hranidba. Meso, Vol. XIII str.50-54.
- 9. Milinković Tur, S., Šimpraga, M. (2017): Fiziologija domaćih životinja. Øystein V. Sjaastad, Olav Sand, Knut Hove/hrvatsko izdanje: Slap, Zagreb.
- Prvanović, N., Cergolj, M., Maćešić, N., Karadjole, T., Bačić, G (2009.): Pristup, dijagnostika i liječenje najčešćih bolesti novorođene ždrijebadi. 1. međunarodni simpozij o konjičkoj industriji i 3. hrvatski simpozij o lipicanskoj pasmini. Slavonski Brod, Hrvatska, 80-83.
- 11. Šerman, V. (2001): Hranidba konja. Hrvatsko agronomsko društvo. Zagreb. (udžbenik)
- 12. Zobundžija, M., Babić, K., Gjurčević Kantura, V. (2009): Anatomija domaćih sisavaca. Horst Erich König/hrvatsko izdanje: Slap, Zagreb.
- 13. Žiga, E.(2001): Konji najpoznatije svjetske pasmine. Sarajevo. (knjiga)
- 14. Godišnja izvješća Hrvatske poljoprivredne agencije (HPA) o stanju u konjogojstvu. (publikacije)
- 15. Hrvatska poljoprivredna agencija (HPA): Procedure i upute u konjogojstvu. (publikacija)
- 16. Hrvatska poljoprivredna agencija (HPA): Nacionalni sustav i upute za identifikaciju i registraciju kopitara u Republici Hrvatskoj. (publikacija).

Subject holder: Damir Alagić, Ph. D., college professor



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 135053	ORNAMENTAL PLANTS AND GARDEN DESIGN		ECTS credits: 4
Professional study	PLANT PRODUCTION		Semester: IV
programme	MANAGEMENT IN AGRICULTURE		
Teachers and associates:		Dijana Horvat, Ph. D., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to independently plan and plant gardens on private and public surfaces.

SUBJECT DESCRIPTION: During the lectures, students will be introduced to the basic flower species used in the design of gardens, trees and shrubs. For each species, the morphological characteristics and method of application will be discussed. Through exercises in the greenhouse and in the flower garden, students will independently shape flower beds, following all the steps from sowing, planting and care.

LEARNING OUTCOMES

LEARNING OUTCOMES After completed exam the student will be able to: 1. Plan the appearance of the garden on the given plot using annual ornamental plant species, and describe and identify the given species 2. Select perennials for use in private and public gardens according to the place of planting (sunny, shade) in combination with biennial flower species and geophytes on the given plot and identify the given species 3. Identify cushion perennials and ground covers and plan the appearance of the garden on the given plot using

the specified flower species 4. Distinguish trees and ornamental shrubs according to flowering time and application 5. Design, build and maintain a flower bed 6. Identify the seeds of annual and biennial flower species

3. Identify cushion perennials and ground covers and plan the appearance of the garden on the given plot using the specified flower species

4. Distinguish trees and ornamental shrubs according to flowering time and application

5. Design, build and maintain a flower bed

6. Identify the seeds of annual and biennial flower species

Literature:

<u>Obligatory:</u>

- 1. Auguštin D. (1999): Cvjećarstvo 1. i 2. Školska knjiga, Zagreb
- 2. Škare L., Tomašević M. (2011): Cvijeće u vrtu. Knjigotisak d.o.o.
- 3. Franjić J., Škvorc Ž.: Ukrasno bilje i drveće i grmlje u Hrvatskoj. Elektronski priručnik (Ministarstvo znanosti i tehnologije)
- 4. Šilić Č., Mrdović A. (2013): Atlas ukrasnih vrtnih biljaka. Fram Ziral d.o.o Mostar

Supplementary:

- 1. Bird R. (2012): 200 najljepših trajnica, Profil knjiga, Zagreb
- 2. MacDonald, E. 400 vrťnih biljaka : praktična enciklopedija jednogodišnjih biljaka, trajnica, lukovica, drveća i grmlja. Rijeka : Dušević & Kršovnik, 2003.
- 3. McHoy P. (2004) : Dizajn vrta, Leo Commerce
- 4. McHoy P. (1998) : Praktično vrtlarstvo, Leo Commerce
- 5. VRT Velika ilustrirana enciklopedija (2005) Mozaik knjiga, Zagreb
- 6. Vrdoljak A., Pagliarini N. (2001.) : Ruže, ukrasno grmlje i drveće, Zrinski d.d., Čakovec
- 7. Karlović K., Vrdoljak A., Pagliarini N. (2000): Vrtno cvijeće, Zagreb, Gospodarski list

Subject holder: Dijana Horvat, Ph. D., senior lecturer



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 38864	t: elective BUILDING CONSTRUCTION IN LIVESTOCK RAISIN		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: IV
Teachers and associates:		Miomir Stojnović, M. Sc., senior lecturer Marija Jakuš Hrestak, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to adequately select material for construction of housing objects in zootechnics, to calculate warmth losses, differentiate between needs and demands of individual livestock categories for microclimate and hygiene in the stable, introduce them with advantages and disadvantages of different construction methods and legal regulation in the field of construction.

SUBJECT DESCRIPTION: The purpose and goal of this subject is to train students to be able to correctly select materials for the construction of buildings in animal husbandry, to calculate the thermal losses of the building, to distinguish the requirements of individual species and categories of livestock for microclimate and hygiene in the barn, to familiarize them with the advantages and disadvantages of different construction methods and legal regulations in the field of construction.

After completed exam the student will be able to:

1. Choose materials for construction in animal husbandry

2. Calculate heat losses of facilities in animal husbandry

3. Distinguish the requirements of individual types and categories of livestock for microclimate and hygiene in the barn

4. Calculate the ventilation capacity of the barn in accordance with the climatic conditions and livestock requirements

5. Interpret rules and requirements for low-energy construction and energy savings

6. Use construction projects to display and interpret the construction and technical-technological features of the farm

Literature:

a) <u>Obligatory:</u>

- 1. Dolanjski D. (2002): Gospodarsko graditeljstvo, interna skripta, Agronomski fakultet Sveučilišta u Zagrebu
- 2. Brčić J. (1966): Mehanizacija rada u stočarstvu, I i II dio, Zagreb
- 3. Asaj A. (2001): Zoohigijena u praksi, Zagreb
- 4. Kostelić A. (1975): Nauka o toplini, Zagreb

b) <u>Supplementary:</u>

- 1. <u>www.energetska-efikasnost.undp.hr</u>
- 2. http://www.dow.com
- 3. http://www.tpub.com/content/construction/14043/css/14043 150.htm
- 4. Zbornici Savjetovanja «Aktualni zadaci mehanizacije poljoprivrede»

Subject holder: Miomir Stojnović, M. Sc., senior lecturer

Subject syllabus Code:	NGUR VGUR	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
Annex 5/SOUK/A 4	1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code:	HORSES AND EQUESTRIAN SPORTS		ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Marijana Vrbančić Igrić, mag. ing. agr., senior lecturer Vedran Nervo, dr.med.vet., lecturer	
		Hours	
Lectures		20	
Exercises and seminars		40	
Practical training		60	

SUBJECT OBJECTIVE: to acquaint students with the state and perspective of horse breeding in the Republic of Croatia, the basics of breeding work and selection in horse breeding, the importance of the equestrian industry, and train them to organize equestrian competitions according to FEI rules depending on the equestrian discipline.

SUBJECT DESCRIPTION: to acquaint students with the state and perspective of horse breeding in the Republic of Croatia, the basics of breeding work and selection in horse breeding, the importance of the equestrian industry, and train them to organize equestrian competitions according to FEI rules depending on the equestrian discipline

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Recognize, name and describe warm-blooded horse breeds

2. Give examples of sports horse breeds in different disciplines of equestrian sports and races

3. Explain the anatomical and physiological characteristics of horses.

4. Analyze and evaluate the horse's gait technique.

5. Differentiate, propose and apply equipment for the horse depending on the discipline for which the horse is being prepared.

6. Organize horse training depending on its age.

7. Assess the utility value of sports horses and manage horse selection.

8. Plan the construction of housing necessary for accommodation and training of sports horses and the holding of individual equestrian competitions.

9. Design and organize an equestrian competition depending on the equestrian discipline according to the FEI rules.

Literature:

<u>Obligatory</u>

- 1. Ivanković, A. (2004): Konjogojstvo. Hrvatsko agronomsko društvo, Zagreb (udžbenik).
- Baban, M. (2011): Konjogojska proizvodnja. Poglavlje u knjizi: Kralik, G., Zdeněk, A., Baban, M., Bogut, I., Gantner, V., Ivanković, S., Katavić, I., Kralik, D., Kralik, I., Margeta, V., Pavličević, J. (2011): Zootehnika. Grafika, Osijek (udžbenik).
- 3. Ivanković, A., Caput-Jogunica R., Ramljak, J. (2013): Jahanje. Hrvatska olimpijska akademija. Sveučilište u Zagrebu, Agronomski fakultet. Zagreb.
- 4. Vrbančić Igrić, M., Nervo, V. (2022): Konji i konjički sport. Visoko gospodarsko učilište u Križevcima.
- 5. Alagić, D. (2022): Uzgoj, zdravlje i dobrobit konja. Visoko gospodarsko učilište u Križevcima.

Supplementary

- 1. HKS (2022): Pravilnik dresurnog jahanja.
- 2. HKS (2022): Pravilnik preponskog jahanja
- 3. HKS (2021): Pravilnik natjecanja u konjičkom višeboju-eventingu
- 4. HKS (2022): Pravilnik natjecanja u daljinskom jahanju
- 5. HKS (2022): Pravilnik vožnje zaprega

Subject holder: Marijana Vrbančić Igrić, mag. ing. agr., senior lecturer



Subject: elective Code: 38902	PIG RAISING		ECTS credits: 4
Professional study programme	MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Tatjana Jelen, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students for independent organisation of pig breeding and production.

SUBJECT DESCRIPTION: Through classes, students will master the material in lectures, exercises and seminars in order to distinguish pig breeds, plan ways of keeping and optimally profitable utilization. Students will be familiar with appropriate pig breeding systems, methods of feeding, carrying out selection and reproduction, and planning preventive and curative health care with the application of welfare measures. Within the subject, based on examples of good practice, students will connect theoretical and practical knowledge and plan possible improvements in pig breeding in order to be trained for the future successful organization of pig breeding production.

LEARNING OUTCOMES
After completed exam the student will be able to:

- 1. Name the breeds and describe the most important characteristics of pig breeds
- 2. Give an example of the best way to raise pigs for successful production
- 3. Propose and apply an appropriate way of carrying out selection and reproduction
- 4. Use welfare measures in pig farming
- 5. Assess the quality of halves and meat
- 6. Differentiate pig keeping systems and point out the advantages and disadvantages of each
- 7. Analyze production indicators and propose improvements
- 8. Plan accommodation facilities on the farm
- 9. Plan preventive health care, recognize the symptoms of the most important diseases and assess the need for treatment
- 10. Prepare a meal for certain categories of pigs
- 11. Organize successful pig production
- 12. Design/propose improvements based on an example from practice

Literature:

- 1. Kralik Gordana, et.al (2007): Svinjogojstvo: Biološki i zootehnički principi, Osijek, Poljoprivredni fakultet Osijek
- 2. Uremović Marija, Uremović Z. (1997): Svinjogojstvo, Agronomski fakultet Sveučilišta u Zagrebu
- 3. Uremović Z., et. al. (2002): Stočarstvo. Agronomski fakultet Sveučilišta u Zagrebu
- 4. Senčić Đ., Pavičić Ž., Bukvić Ž (1996): Intenzivno svinjogojstvo, Nova Zemlja, Osijek

Subject holder: Tatjana Jelen, Ph. D., college professor

H A B B K	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective	Subject: elective VETERINARY MEDICINE AND TRADE OF ANIMAL		ECTS gradite: 4
Code: 46 PRODUCTS			ECTS CIEURS. 4
Professional study	y PLANT PRODUCTION		Somootor: V
programme MANAGEMENT IN AGRIC		RICULTURE	Semester. V
Teachers and associates:		Tatjana Tušek, Ph. D., college professor	
		Damir Alagić, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to use theoretical and practical knowledge in practice and with independent administration of processes in zootechnics.

SUBJECT DESCRIPTION: The subject covers the health protection of animals and the implementation of mandatory legal measures in the case of certain infectious and invasive diseases that can cause great economic damage in the organization of production; the importance of proper reproduction of animals; veterinary-sanitary supervision in the evaluation of carcasses and animal products (application of preservation methods and supplements), and factors that affect their quantitative and qualitative values; ecologically acceptable disposal of slaughter by-products and waste water and sanitation measures.

LEARNING OUTCOMES

After completed exam the student will be able to:

1. In animal breeding, recognize and differentiate changes that indicate disease states and react in a timely manner to ensure health care

2. Explain the significance and specifics of animal products

3. List and describe the peculiarities of animal transport

4. Assess the importance of traceability of products of animal origin and interpret critical points in production by introducing HACCAP

5. Critically judge the implemented sanitation measures

6. To judge the reproductive status of animals and to use proper reproduction in breeding while obtaining an optimal number of vital cubs

7. Assess the housing conditions of animals and their impact as well as the impact of feeding on the health status of domestic mammals and poultry and solve problems related to the keeping, feeding and exploitation of animals

Literature:

Obligatory for studying and preparing for exam:

- Asaj, A. ((2003): Higijena na farmi i u okolišu. Medicinska naklada, Zagreb.
- Brinzej, M. i sur. (1991): Stočarstvo. Školska knjiga, Zagreb.
- Grupa autora (2012): Veterinarski priručnik. Medicinska naklada, Zagreb.
- Hadžiosmanović, M. (2001): Higijena i tehnologija mesa, veterinarsko-sanitarni nadzor životinja za klanje i mesa. Sveučilište u Zagrebu, Zagreb.
- Kozačinski, L., Njari, B., Cvrtila Flek,, Ž. (2012): Veterinarsko javno zdravstvo i sigurnost hrane.
 Veterinarski fakultet Sveučilišta u Zagrebu, Zagreb.
- Njari, B., Zdolec, N. (2012): Klaonička obrada i veterinarski pregled. Veterinarski fakultet Sveučilišta u Zagrebu, Zagreb.
- Tušek, T, D. Alagić, V. Nervo (2020): Pojmovnik za veterinarstvo. Visoko gospodarsko učilište u Križevcima, Križevci. Elektronska publikacija (NSK brojevi za mrežnu publikaciju: ISBN 978-953-6205-38-7/CD publikaciju: ISBN 978-953-6205-37-0).
- Živković, J. (1986): Higijena i tehnologija mesa, kakvoća i prerada I. Školska knjiga, Zagreb.

Supplementary:

- Rupić, V. (1986): Zdravstvena zaštita domaćih životinja (I i II dio). Sveučilišna naklada Liber, Zagreb.
- WEB sites.

Subject holder: Tatjana Tušek, Ph. D., college professor

NGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code: 96742	MARKETING AND FARM MANAGEMENT		ECTS credits: 4
Professional study	PLANT PRODUCTION LIVESTOCK RAISING		Semester: V
programme			
Teachers and associates:		Kristina Svržnjak, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with basic notions and application of marketing and management in agricultural sector.

SUBJECT DESCRIPTION: To acquaint students with the basic terms and application of marketing and management in the agricultural sector.

LEARNING OUTCOMES	
After completed exam the student will be able to:	

1. Ex	plain basic conce	pts from the	field of m	arketing and	management

2. Recognize the basic elements of the marketing mix

3. Use a promotional mix for better promotion of agricultural products

4. Differentiate between different promotional options and elements of the promotional mix

5. Create a SWOT analysis related to the specific agricultural economy. Create a Gantt chart.

6. Differentiate between different approaches to market research and direct sales.

7. Search relevant databases in search of relevant data necessary for making business decisions and for developing ideas for agricultural business

8. Express clearly and with arguments about your views regarding the assessment of marketing/managerial activities on the analyzed examples of agricultural holdings

9. Participate in team work

10. Present your own research results to a wider audience

11. Manage time

Literature:

<u>Obligatory:</u>

1. Svržnjak, Kristina: Osnove menadžmenta u poljoprivredi, interna skripta, Visoko gospodarsko učilište u Križevcima

- 2. Kolega A., Božić M., (2001): Hrvatsko poljodjelsko tržište. Tržništvo, Zagreb (pojedina poglavlja)
- 3. Kolega A., Kovačević D., (1995): Uspješna prodaja. Tržništvo, Zagreb.

Supplementary:

- 1. Kotler P., (1994): Marketing management. Informator, Zagreb (pojedina poglavlja)
- 2. Kohls R., Uhl N. J., (1998): Marketing of agricultural products. Purdue University, New Jersey (pojedina poglavlja)

Subject holder: Kristina Svržnjak, Ph. D., college professor

VGUK	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code: 115629	QUALITY MANAGEME PRODUCTION	ENT IN AGRICULTURAL	ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Dušanka Gajdić, univ. spec. oec., senior lecturer Siniša Srečec, Ph. D., colege professor Matea Habuš, Ph. D., lecturer	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with basic processes and standards of quality management in agricultural production and their role in production and distribution of healthy and safe food on the market.

SUBJECT DESCRIPTION: introduce the students with basic processes and standards of quality management in agricultural production and their role in production and distribution of healthy and safe food on the market. **LEARNING OUTCOMES**

	After completed exam the student will be able to:
1.	Explain key terms in the field of quality, control, assurance and quality management.
2.	Explain the basic terms of standardization and the strategic and economic value of norms and
	standardization.
3.	Distinguish subjects in food business and their obligations in food handling.
4.	Identify food safety and quality problems in the country and abroad and the risks that occur in food
	business.
5.	Explain the basic legal regulations in the field of food safety.
6.	Explain the importance and role of food information and food labeling in protecting the interests and
	safety of consumers.
7.	Differentiate between quality signs of agricultural and food products and their meaning and role in the
	food market.
8.	Distinguish the most important international norms in the field of agricultural and food production and
	the importance of their application from the point of view of producers, consumers and society as a
	whole.
9.	Give an example of the application of norms for food safety management in the Republic of Croatia and
	the EU.
10.	Use professional terminology when communicating with experts in the field of quality
11.	Present your own research results to a wider audience

Literature:

Obligatory:

- 1. Lazibat, T.: Upravljanje kvalitetom, Znanstvena knjiga d.o.o., Zagreb (2009.)
- 2. Babić, I.; Đugum, J. i sur.: Uvod u sigurnost hrane, Inštitut za sanitarno inženirstvo Slovenije, Ljubljana, 2014.
- 3. Havranek, J., Tudor Kalit, M. i sur.: Sigurnost hrane-od polja do stola, M.E.P., 2014.
- 4. Štajdohar-Pađen O.: Plivati s ISO-om i ostati živ, Kigen d.o.o., Zagreb, 2009.
- 5. Materijali s predavanja

Supplementary:

- 1. Injac, N.: Mala enciklopedija kvalitete I. dio, Oskar, Zagreb (1998.)
- 2. Injac, N.: Mala enciklopedija kvalitete III. dio, Moderna povijest kvalitete, Oskar, Zagreb (2001.)
- 3. Drljača, M: Mala enciklopedija kvalitete V dio, Troškovi kvalitete, Oskar, Zagreb (2004.)
- 4. Juran, J.M., Gryna, F.M.: Planiranje i analiza kvalitete, MATE, Zagreb (1999.)
- 5. Turčić, V.: HACCP i higijena namirnica, Biblioteka higijena i praksa, Zagreb (2000.)
- 6. M.Sorak; O.M.Belloso; A. Nikolić; S.Grujić: Quality management system way ahead for the food industry, Tehnološki fakultet Univerziteta u Banjo Luci, Banja Luka, (2003.)
- 7. Krešić, G.: Trendovi u prehrani, Fakultet za menadžment u turizmu i ugostiteljstvu, Opatija (2012.)
- 8. Važeći zakoni, standardi i pravilnici
- 9. Ostala relevantna i aktualna literatura i izvori informacija koje predmetni nastavnik preporuča prije početka nastave.

Subject holder: Dušanka Gajdić, univ. spec. oec., senior lecturer

NGUR H	KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES	Edition: April 2017
1860 GU	Subject syllabus	Code: Annex 5/SOUK/A 4.3.1.

Subject: elective Code: 96761	FORAGE CROPS AND GRASS PRODUCTION ECTS cre		ECTS credits 4
Professional study programme	PLANT PRODUCTION		Semester: V
Teachers and associates:		Marcela Andreata-Koren, Ph. D., college professor	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the participants to independently organise production of fodder plants in the fields and on natural grasslands.

SUBJECT DESCRIPTION: The situation in the production of fodder plants in the Republic of Croatia. Forms of fodder production on arable land and natural grasslands. Annual and perennial fodder crops on arable land. Forage production on natural grasslands. Storing feed

LEARNING OUTCOMES

After completed exam the student will be able to:

- 1. Recognize the types of feed according to the type and content of digestible nutrients
- 2. Explain the forms of fodder production
- 3. Explain the differences between legumes and non-legumes
- 4. Recognize forage crops in different stages of growth and development
- 5. Recognize the seeds of fodder crops

6. Determine the possibility of growing certain fodder crops in certain agro-climatic conditions during the year

- 7. Calculate the structure/vegetation space and the required amount of fertilizer/nutrients for the production of
- a specific fodder crop

8. Plan agrotechnical measures for certain fodder crops

9. Explain the advantages and disadvantages of different methods of storing and using forage

10. Assess the correctness of certain production of fodder plants and grassland on a certain farm

Literature:

Obligatory for studying and preparing for exam:

- 1. Gagro, M. (1998): Ratarstvo obiteljskoga gospodarstva- Industrijsko i krmno bilje. Zagreb.
- 2. Katalinić, I., Pejaković, D., Brčić, J. (2000): Spremanje sjenaže, Zagreb.
- 3. Kovačević, V., Rastija, M. (2014): Žitarice. Poljoprivredni fakultet u Osijeku, Sveučilište JJS u Osijeku.
- 4. Stjepanović, M., Štafa, Z. i Bukvić Gordana (2008): Trave za proizvodnju krme i sjemena, HMU, Zagreb
- 5. Štjepanović, M., Zimmer, R., Tucak, M., Bukvić, G., Popović, S., Štafa, Z. (2009): Lucerna. Poljoprivredni fakultet Osijek.
- 6. Pospišil, A. (2010): Ratarstvo 1. dio. Zrinski d.d., Čakovec
- 7. Štafa, Z., Stjepanović, M. (2015): Ozime i fakultativne krmne kulture: proizvodnja i korištenje. HMU, Zagreb

Supplementary:

- 1. Gagro, M. (1997): Ratarstvo obiteljskoga gospodarstva- Žitarice i zrnate mahunarke, Zagreb.
- 2. Forenbacher, S. (1998): Otrovne biljke i biljna otrovanja životinja, Školska knjiga, Zagreb.
- 3. Različiti i pojedinačni podaci o krmnim kulturama iz znanstvenih i stručnih časopisa (Krmiva,
- Stočarstvo, Poljoprivredni savjetnik, Mljekarstvo i dr.

Subject holder: Marcela Andreata-Koren, Ph. D., college professor

Subject sylla	abus Code: Annex 5/SOUK/A 4.3.1	1.

Subject: elective VEGETABLE PRODUC Code: 38855 VEGETABLE PRODUC		CTION IN PROTECTED AREAS	ECTS credits: 4
Professional study	PLANT PRODUCTION		Somostor: V
programme	MANAGEMENT IN AGRICULTURE		Semester. v
Teachers and associates:		Tomislava Peremin Volf, M. Sc., senior lecturer	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: introduce the students with basic knowledge needed for independent production of vegetables in heated and non-heated protected areas.

SUBJECT DESCRIPTION: The aim of the subject Vegetable production in protected areas is to acquaint students with the basic knowledge needed for independent vegetable production in heated and unheated sheltered areas. Through the course, students gain knowledge about the importance, purpose and types of protected areas, construction and materials for creating protected areas, regulation of vegetation factors in protected areas and the specifics of protection, growing substrates and techniques for growing vegetables without soil. Students will also learn about the specifics of growing selected vegetables in a protected area.

LEARNING OUTCOMES

LEARNING OUTCOMES

After completed exam the student will be able to:

1. Assess the suitability of the location for the construction of protected areas

2. List the materials for the construction of protected areas and compare their properties

3. Describe the methods and equipment used to regulate vegetation factors in protected areas

4. Distinguish the techniques of growing vegetables without soil

5. Create an example of balanced fertilization for a selected vegetable crop grown in a protected area

6. Specify the specifics of growing the selected vegetable crop in a protected area and choose the terms of cultivation depending on the type of protected area and equipment

Literature:

Obligatory:

- 1. Lešić Ružica i sur. (2004): Povrćarstvo. Zrinski d. d., Čakovec.
- Parađiković, Nada (2009): Opće i specijalno povrćarstvo, Poljoprivredni fakultet u Osijeku, Osijek
- 3. Dadaček, Nada, Peremin Volf, Tomislava (2008): Agroklimatologija, Visoko gospodarsko učilište u Križevcima, Križevci

Supplementary:

- Šimunić, I., Špoljar, A., Peremin Volf, Tomislava (2007): Vježbe iz tloznanstva i popravka tla, skripta, Visoko gospodarsko učilište u Križevcima, Križevci.
- 2. Hanan, J.J., (1998): Greenhouses: Advanced technology for protected horticulture, CRC Press, Boca Raton, London, New York, Washington, D.C.
- 3. Kamp, P., Timmerman, G. J., (2003). Computerised Environmental Control in Greenhouses. PTC⁺, Netherlands
- 4. Stručni članci u časopisima

Subject holder: Tomislava Peremin Volf, M. Sc., senior lecturer



Edition: April 2017 Code: Annex 5/SOUK/A 4.3.1.

KRIŽEVCI UNIVERSITY OF APPLIED SCIENCES

Subject: elective Code: 96736	HOP GROWING AND	BERRIES	ECTS credits: 4
Professional study programme	PLANT PRODUCTION LIVESTOCK RAISING MANAGEMENT IN AGRICULTURE		Semester: V
Teachers and associates:		Siniša Srečec, Ph. D., college professor Iva Šikač, mag. ing. agr., assistant	
		Hours	
Lectures		30	
Exercises and seminars		30	
Practical training		-	

SUBJECT OBJECTIVE: enable the students to independently organise production or provide advice on cultivation of hops and berry fruits. **SUBJECT DESCRIPTION:**

LEARNING OUTCOMES

After co	ompleted exam the student will be able to:
1.	1. Explain the importance of hop growing and berries for human consumption
2.	2. Describe the conditions for growing hops and berries
3.	3. Explain the specifics of hop production
4.	4. Differentiate between berry cultivation systems
5.	5. Define the harvest period of individual cultivars of hops and berries
6.	6. Assess the quality of hops with satisfaction of quality standards and consumer needs
7.	7. Describe the process of storing and processing hops into hop preparations

Literature:

Obligatory:

- 8. Srečec S. (2004.): Hmeljarstvo (sveučilišni udžbenik). Visoko gospodarsko učilište u Križevcima, Križevci
- 9. Anon. (1998): EBC Analytica, EBC Analysis Committee. Hans Carl Getränke Fachverlag
- 10. Krpina, Ivo i suradnici (2004): Voćarstvo, Nakladni zavod Globus, Zagreb
- 11. Volčević B. (2008): Jagodičasto voće, Neron, Bjelovar

Supplementary:

- Srečec, S., Zechner-Krpan, V., Petravić-Tominac, V., Košir, I.J., Čerenak, A. (2012): Importance of Medical Eff ects of Xanthohumol, Hop (*Humulus lupulus* L.) Bioflavonoid in Restructuring of World Hop Industry. Agriculturae Conspectus Scientificus 77: 61-67.
- Srečec, S., Zechner-Krpan, V., Marag, S., Mršić, G., Špoljarić, (2011): Hop pellets type 90: ESEM studies of glandular trichomes morphological and structural changes during the different phases of hop processing. Acta Alimentaria, 40(2): 282-290 DOI: 10.1556/AAlim.40.2011.2.12.
- Srečec, S., Zechner-Krpan, V., Marag, S., Spoljarić, I., Kvaternjak, I., Mršić, G. (2011): <u>Morphogenesis</u>, <u>volume and number of hop (Humulus lupulus L.) glandular trichomes</u>, and their influence on alpha acids <u>accumulation in fresh bracts of hop cones</u>. Acta botanica Croatica, 70(1): 1-8. DOI: 10.2478/v10184-010-0006-5.
- 4. Srečec S., Zechner-Krpan, V., Petravić-Tominac, V., Mršić, G., Špoljarić, I., Marag, S. (2010): ESEM studies of hop (*Humulus lupulus*, L.) peltate and bulbous glandular trichomes structure. Agriculturae Conspectus Scientificus, 75(3): 145-148.
- Srečec S., V. Zechner-Krpan, V. Petravić-Tominac, A. Čerenak, Z. Liber, Z. Šatović (2010): Phenotypic and α-acid Content Diversity of Wild Hop Populations in Croatia. Plant, Soil and Environment, 56(1), 37-42.
- 6. Westwood M. N. (1995): TEMPERATE-ZONE POMOLOGY: Physiology and Culture, Timber Press, Portland, Oregon
- 7. Gaucher, Nicolas (1997): Pomologie des praktischen Obstbaumzüchters
- 8. Stančević, Asen (2005): Jagoda i malina, Nolit, Beograd
- 9. Miloš, Tvrtko (1997): Jágoda, Naklada Jurčić, Zagreb
- 10. Bachmann, Ingeborg (1992): Malina, Globus, Zagreb
- 11. Dušan, Stanković (1982): Ribizla, Ogrozd, Borovnica, Kupina: osobine sorte i načini gajenja i iskorišćavanja, Nolit, Beograd

Important links:

- 1. <u>www.hopsteiner.com</u>
- 2. www.barthhaasgroup.com
- 3. http://www.hmelj-giz.si/ihgc/