

2021-2022

## Animal Breeding and Production

UNIVERSITY OF ZAGREB  
FACULTY OF VETERINARY MEDICINE

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129687	REPUBLIKA HRVATSKA	
Veterinarski fakultet u Zagrebu		
Primljeno:	07.09.2021	
Klasifikacijska oznaka	Org. jed.	
605-03/21-04/31	251-61-32;	
Urudžbeni broj	Prilozi	Vrijednost
251-61-09-21-25	0	-

### COURSE SYLLABUS

Course name: **Animal Breeding and Production** (3<sup>rd</sup> semester)

Academic year 2021-2022

Course leader: Anamaria Ekert Kabalin, PhD, Full Professor

Teachers: Velimir Sušić, PhD, Full Professor (permanent)  
Sven Menčik, PhD, Associate Professor  
Maja Maurić Maljković, PhD, Assistant Professor

Associate teachers: Ivan Vlahek, VMD  
Aneta Piplica, VMD

First day of classes: November 11<sup>th</sup> 2021

Last day of classes: January 19<sup>th</sup> 2022

**Timetable for LECTURES academic year 2021-2022**

<b>LECTURES</b>				
<b>Date</b>	<b>Methodological unit</b>	<b>Teacher</b>	<b>Location / time</b>	<b>Literature</b>
16.11.2021.	Animal breeding and production - introduction, definition and importance. Animal breeding traits - measurability and economic value. General and special animal breeding traits. Inheritance and variability of animal breeding traits. Introduction to the different production systems.	Anamaria Ekert Kabalin, PhD, Full Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 10.00 -12.00	According to the literature list.
19.11.2021.	Preventive measures and procedures of health protection as parts of technology in animal production.	Sven Menčik, PhD, Associate Professor	Lecture Room, Department of Physiology and Radiobiology 14.00 -16.00	According to the literature list.
23.11.2021.	Production systems in cattle farming. Herd health and production management (dairy / beef cattle). 1 <sup>st</sup> part.	Maja Maurić Maljković, PhD, Assistant Professor	Lecture Room, Department of Physiology and Radiobiology 14.00 -16.00	According to the literature list.

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25.11.2021.	Production systems in cattle farming. Herd health and production management. 2 <sup>nd</sup> part. Production systems in sheep and goat farming. Herd health and production management (sheep and goats). 1 <sup>st</sup> part.	Maja Maurić Maljković, PhD, Assistant Professor  Velimir Sušić, PhD, Full Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 10.00 -12.00	According to the literature list.
29.11.2021.	Production systems in sheep and goat farming. Herd health and production management (sheep and goats). 2 <sup>nd</sup> part.	Velimir Sušić, PhD, Full Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 12.00 -14.00	According to the literature list.
30.11.2021.	Production systems in pig farming. Herd health and production management (pigs). 1 <sup>st</sup> part.	Anamaria Ekert Kabalin, PhD, Full Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 10.00 -12.00	According to the literature list.
6.12.2021.	Production systems in pig farming. Herd health and production management (pigs). 2 <sup>nd</sup> part. Breeding and exploitation of laboratory animals and rabbits.	Anamaria Ekert Kabalin, PhD, Full Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 10.00 -12.00	According to the literature list.
7.12.2021.	Production systems in poultry farming. Herd health and production management (poultry).	Sven Menčik, PhD, Associate Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 12.00 -14.00	According to the literature list.
20.12.2021.	Training and use of horses.	Maja Maurić Maljković, PhD, Assistant Professor	Lecture Room, Department of Physiology and Radiobiology 10.00 -12.00	According to the literature list.
10.1.2022.	Training and exploitation of dogs. Raising cats.	Anamaria Ekert Kabalin, PhD, Full Professor	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 14.00 -16.00	According to the literature list.

Timetable for SEMINARS academic year 2021-2022

SEMINARS					
Date	Methodological unit	Teacher	Group	Location / time	Literature
14.12.2021.	Dairy farm / beef cattle farm + Herd health and production management (dairy / beef cattle).	Maja Maurić Maljković, PhD, Assistant Professor	1,2,3	Lecture Room, Department of Veterinary Pathology 10.00 -12.00	1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> lecture. Practicals 1 to 4. Annual reports of the Croatian Agricultural Agency/ FAO reports. Relevant websites and prepared materials.
15.12.2021.	Sheep/goat dairy farm / Farm for sheep/goat meat production. Herd health and production management (sheep and goats).	Velimir Sušić, PhD, Full Professor	1,2,3	Lecture Room, Department of Physiology and Radiobiology 12.00 -14.00	1 <sup>st</sup> , 2 <sup>nd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> lecture. Practicals 1 to 4. Annual reports of the Croatian Agricultural Agency/ FAO reports. Relevant websites and prepared materials.
16.12.2021.	Pig production farm + Herd health and production management (pigs).	Anamaria Ekert Kabalin, PhD, Full Professor	1,2,3	Lecture Room, Department of Microbiology and Infectious Diseases with Clinic 14.00 -16.00	1 <sup>st</sup> , 2 <sup>nd</sup> , 6 <sup>th</sup> and 7 <sup>th</sup> lecture. Practicals 1 to 4. Annual reports of the Croatian Agricultural Agency/ FAO reports. Relevant websites and prepared materials.
22.12.2021.	Laying hens farm / Broiler production farm + Herd health and production management (poultry).	Sven Menčik, PhD, Associate Professor	1,2,3	Lecture Room, Department of Physiology and Radiobiology 10.00 -12.00	1 <sup>st</sup> , 2 <sup>nd</sup> and 8 <sup>th</sup> lecture. Practicals 1 to 4. Annual reports of the Croatian Agricultural Agency/ FAO reports. Relevant websites and prepared materials.

## Timetable for PRACTICALS academic year 2020-2021

PRACTICALS						
Date	Methodological unit	Teacher	Type of practical	Group	Location / time	Literature
23.11.2021.	Traits in animal breeding and selection: examples of values, measurement and calculations. Application of molecular genetic technologies in animal breeding and production. 1 <sup>st</sup> part	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Laboratory practicals	2	Department of Animal Breeding and Livestock production 10.00 -12.00	1 <sup>st</sup> lecture and written preparations for specific practical topics
25.11.2021.	Traits in animal breeding and selection: examples of values, measurement and calculations. Application of molecular genetic technologies in animal breeding and production. 1 <sup>st</sup> part	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Laboratory practicals	1	Department of Animal Breeding and Livestock production 12.00 -14.00	1 <sup>st</sup> lecture and written preparations for specific practical topics
25.11.2021.	Traits in animal breeding and selection: examples of values, measurement and calculations. Application of molecular genetic technologies in animal breeding and production. 1 <sup>st</sup> part	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Laboratory practicals	3	Department of Animal Breeding and Livestock production 14.00 -16.00	1 <sup>st</sup> lecture and written preparations for specific practical topics
30.11.2021.	Traits in animal breeding and selection: examples of values, measurement and calculations. Application of molecular genetic technologies in animal breeding and production. 2 <sup>nd</sup> part	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Laboratory practicals	3	Department of Animal Breeding and Livestock Production 12.00 -14.00	1 <sup>st</sup> lecture and written preparations for specific practical topics

30.11.2021.	Traits in animal breeding and selection: examples of values, measurement and calculations. Application of molecular genetic technologies in animal breeding and production. 2 <sup>nd</sup> part	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Laboratory practicals	1,2	Department of Animal Breeding and Livestock Production 14.00 -16.00	1 <sup>st</sup> lecture and written preparations for specific practical topics
1.12.2021.	Technological basics in the production of milk.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	1,2	Department of Animal Breeding and Livestock Production 11.00 -13.00	Lectures (1 <sup>st</sup> to 5 <sup>th</sup> ) and written preparations for specific practical topics
2.12.2021.	Technological basics in the production of milk.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	3	Department of Animal Breeding and Livestock Production 10.00 -12.00	Lectures (1 <sup>st</sup> to 5 <sup>th</sup> ) and written preparations for specific practical topics
13.12.2021.	Technological basics in the production of beef meat.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	3	Department of Animal Breeding and Livestock Production 8.00 -10.00	Lectures (1 <sup>st</sup> to 7 <sup>th</sup> ) and written preparations for specific practical topics
13.12.2021.	Technological basics in the production of beef meat.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	1,2	Department of Animal Breeding and Livestock Production 12.00 -14.00	Lectures (1 <sup>st</sup> to 7 <sup>th</sup> ) and written preparations for specific practical topics

17.12.2021.	1 <sup>st</sup> Colloquium. Technological basics in the production of poultry meat and eggs.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	3	Department of Animal Breeding and Livestock Production 10.00 -12.00	Colloquium: Practicals 1,2, 3 and 4. Lectures 1 to 7.  2 <sup>nd</sup> and 8 <sup>th</sup> lecture and written preparations for specific practical topics
17.12.2021.	1 <sup>st</sup> Colloquium. Technological basics in the production of poultry meat and eggs.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	1,2	Department of Animal Breeding and Livestock Production 12.00 -14.00	Colloquium: Practicals 1,2, 3 and 4. Lectures 1 to 7.  2 <sup>nd</sup> and 8 <sup>th</sup> lecture and written preparations for specific practical topics
13.1.2022.	The basics of training and use of horses.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	3	Department of Animal Breeding and Livestock Production 8.00 -10.00	9 <sup>th</sup> lecture and written preparations for specific practical topics
14.1.2022.	The basics of training and use of horses.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	1,2	Department of Animal Breeding and Livestock Production 8.00 -10.00	9 <sup>th</sup> lecture and written preparations for specific practical topics
17.1.2022.	The basics of dogs training. Basics of breeding and raising of rabbits and the most common cage pets.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	3	Department of Animal Breeding and Livestock Production 10.00 -12.00	7 <sup>th</sup> and 10 <sup>th</sup> lecture and written preparations for specific practical topics

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18.1.2022.	The basics of dogs training. Basics of breeding and raising of rabbits and the most common cage pets.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	1,2	Department of Animal Breeding and Livestock Production 8.00 -10.00	7 <sup>th</sup> and 10 <sup>th</sup> lecture and written preparations for specific practical topics
19.1.2022.	2 <sup>nd</sup> Colloquium. The basics of dogs training. Basics of breeding and raising of rabbits and the most common cage pets.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	1,2	Department of Animal Breeding and Livestock Production 12.00 -14.00	Colloquium: Practicals 5,6 and 7. Lectures 7 to 10.  7 <sup>th</sup> and 10 <sup>th</sup> lecture and written preparations for specific practical topics
19.1.2022.	2 <sup>nd</sup> Colloquium. The basics of dogs training. Basics of breeding and raising of rabbits and the most common cage pets.	Teachers and associate teachers within Department of Animal Breeding and Livestock Production	Exercises in practicum	3	Department of Animal Breeding and Livestock Production 14.00 -16.00	Colloquium: Practicals 5,6 and 7. Lectures 7 to 10.  7 <sup>th</sup> and 10 <sup>th</sup> lecture and written preparations for specific practical topics



STUDENT OBLIGATIONS

Lecture attendance	<p>During 3<sup>rd</sup> semester maximal number of points from this evaluation element is 3.53 (the lowest number of points that a student should gain from this element is 1.76). Every hour of lecture (from a total of 20 hours) contributes with 0.176 points. The student must attend at least 10 hours of lectures to obtain minimal number of points.</p>
Seminars attendance	<p>During 3<sup>rd</sup> semester maximal number of points from this evaluation element is 3.5 (minimal is 2.5 points). A total of 8 hours of seminars are held in 4 terms of two hours each. The student must attend at least 3 terms of the seminar to obtain minimal number of points.</p>
Practicals attendance	<p>During 3<sup>rd</sup> semester maximal number of points from this evaluation element is 3.2 (minimal is 2.2 points). A total of 16 hours of practicals are held in 8 terms of two hours each. The student must attend at least 6 terms of the practicals to obtain minimal number of points.</p>
Active participation in seminars and practicals	<p>During 3<sup>rd</sup> semester maximal number of points from this evaluation element is 6 (minimal is 2.81 points). For each successfully written seminar (preparation) and for successfully completed assignment on the practical, the student receives 0.31 points.</p> <p>The minimum number of points a student must earn from activities in seminars and practicals is 2.81: at least 0.94 points should be obtained on seminars (at least 3 successfully written seminars) and 1.88 points should be obtained for activity on practicals (6 successfully completed tasks). The student can earn an additional 0.5 points for successful oral answer on practicals or seminar presentation.</p> <p>If the student successfully writes all the seminars (4) and successfully completes the tasks on practicals (8), he / she can earn a total of 3.75 points. The remaining activity points (up to a maximum of 6) may be obtained through oral answers and presentations at seminars and practicals.</p>

Final exam	At the end of the third semester, there is no final exam. In order to attend the course during fourth semester, student must earn a minimum number of points from each type of activity in the third semester. The results of continuous knowledge checking (colloquia) are not a prerequisite for listening to the course in 4th semester. Dates of the final exam (written and oral) will be announced in the Course syllabus for 4th semester.
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. <b>Article 45:</b> a student can justifiably be absent from up to 50 % of the lectures; 30% of the seminars and 30 % of the practicals.

#### GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	Continuous knowledge checking (colloquia) during 3 <sup>rd</sup> semester (10-16 points):  Colloquium 1: minimal 5 points, maximal 8 points (17.12.2021.) Colloquium 2: minimal 5 points, maximal 8 points (19.1.2022.)
Final exams (dates)	Final exam is after finishing 4 <sup>th</sup> semester
Form of final exam	Written and oral

#### LITERATURE

Obligatory literature	Lasley, J.F.: Genetics of Livestock Improvement. Prentice-Hall, Inc., New Jersey, 1987.; Jiang, Ott: Reproductive genomics in domestic animals, 2010.; FAO: Marker assisted selection, 2007.; Pierce: Genetics, 2003.; Muir, Aggrey: Poultry genetics, breeding and biotechnology, 2003.; Houghton Brown, Pilliner, Davies: Horse and stable management, 2003.; Root Kustritz: The dog breeders guide to successful breeding and health management, 2006.; Vella, Shelton, McGonagle, Stanglein: Robinsons genetics for cat breeders and veterinarians, 2003. selected web pages
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Optional literature	Lokhorst, Groot Koerkamp: Precision livestock farming, 2009.; Axford, Bishop, Nicholas, Owen: Breeding for disease resistance in farm animals, 2000.; Field, Taylor: Scientific farm animal production, 2009.; Radostits, O.M.: Herd Health. W.B. Saunders Company. Philadelphia, 2001.; Brand, Nordhuisen, Schukken: Hered health and production management in dairy practice, 1997.
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### OBJECTIVES AND LEARNING OUTCOMES

Course objectives	The objective of the course Animal breeding and production is to teach students of veterinary medicine how to evaluate and improve genetic basis of animals. Special attention is focused on genotype-phenotype characteristics that have influence on quality and quantity of animal products, than to the characteristics of animal resistance to diseases and animal organism -environment interactions. Material is divided into two parts. Students firstly acquire knowledge about different production systems and the way of using animal genetics to improve quantity and quality of production and in the same time how production influence on animal health. Then there are lessons on how to estimate genetic basis of particular traits and breeding methods how to improve this traits.
Learning outcomes	<p>After successfully completion of the course students will be able to:</p> <ul style="list-style-type: none"> <li>- understand the role of genetic basis in different ways of breeding and exploiting animals</li> <li>- apply different methods to improve the genetic basis of animals with respect to specific breeding traits</li> <li>- identify various animal production systems</li> <li>- gather animal health and production data</li> <li>- analyse animal health and production data</li> <li>- setting the goals in cooperation with farmer</li> <li>- control advancement according to set goals</li> </ul>

**GRADING SCHEME**

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-68	2 (E)
69-76	2 (D)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

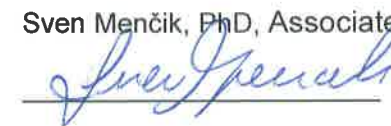
Course leader:

Anamaria Ekert Kabalin, PhD, Full Professor



Head of Department/Clinic:

Sven Menčik, PhD, Associate Professor



Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Course.