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| **QUANTITATIVE GENETICS AND SELECTION** |
| **Course coordinator** | Associate professor, Boris Lukić |
| **Associates in the course** | Associate professor, Nikola Raguž |
| **Study programme** | MSc Diploma study, Zootehnique (Special zootehnique) |
| **Course status** | Obligatory |
| **Year and semester** | First year, I. semester |
| **Credits and type of lecture** | ECTS | 6 |
| Classes (L + P + S) | 75 (45L + 30P) |
| **COURSE DESCRIPTION**  |
| **Learning objectives** | Introduce students to the concept of the inheritance of quantitative traits, mathematical-statistical methods in assessing their phenotypic, genetic, and environmental variability, the concept of heritability and breeding values, and the methods of selection for quantitative traits based on phenotypic and genomic information. |
| **Prerequisites for course** | No prerequisites. |
| **Learning outcomes of the course** |
| After successfully completing the module, the student will be able to:1. Explain the concept of inheritance of quantitative traits.
2. Understand the concept of heritability and breeding value.
3. Identify selection methods according to the nature of the trait, characteristics of the population and the breeding program.
4. Evaluate the selection effects according to different criteria.
5. Understand the concept underlying the application of molecular markers in selection.
6. Participate in the creation and evaluation of breeding programs, evaluating genetic parameters, breeding values of individuals in populations under production control.
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| **Evaluation of students' work during class and at the final exam** |
| The right to take the final exam is obtained by collecting a minimum number of grading points. Grade points are earned on the basis of class attendance (minimum 70%), student activities and grades from the partial exams. During the semester, students take three partial exams. The final exam is mandatory, and a positive grade from the final exam is a prerequisite for a positive final grade. The final exam is oral. |
| **Compulsory literature** |
| 1. Lukić, B. Notes from the lectures
2. Raguž, N. Notes from the lectures
3. Oldenbroek Kor and van der Waaij Liesbeth. Textbook Animal Breeding and Genetics for BSc students. Centre for Genetic Resources. The Netherlands and Animal Breeding and Genomics Centre, 2015.
4. Mrode R. Linear Models for the Prediction of Animal Breeding Values. CABI Publishing, 2014.
5. Jovanovac, S. Populacijska genetika domaćih životinja. Skripta. Poljoprivredni fakultet u Osijeku, 2005.
6. Jovanovac, S. Principi uzgoja životinja. Sveučilišni udžbenik, Osijek, 2013.
7. Rimac, D. Priručnik za vježbe iz Populacijske genetike domaćih životinja, Poljoprivredni fakultet u Osijeku, 2005.
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| **Additional literature** |
| 1. Falconer, D.S., Mackay, T.F. Introduction to Quantitative Genetics. Longman Group; Ltd, 1996.
2. Van Vleck, L. Dale. Selection index and introduction to mixed model methods. CRC Press. 1999.
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