University of Zagreb Faculty of Agriculture
Svetošimunska cesta 25, 10000 Zagreb
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Livestock production and the environment (169514)

Course coordinator

Prof. Zvonimir Prpić, PhD

Course description

The main objective of this course is to provide a sound understanding of how a commercial livestock production activities impact on the environment, how these activities might be altered in order to minimise their impact on the environment and how this can be done in a manner that ensures the continued profitability of the organisation. Further, one of the objectives is to analyze possibilities for expanding the sustainable livestock production aiming at more effective use of autochthonous livestock breeds and other natural resources without jeopardising human environment. Students will also gain a knowledge of the pollution potential of livestock production systems as well as of the assumptions and approaches used in waste management techniques, including how these techniques can be changed in order to implement sustainable practice for the benefits and the long-term interests of the livestock industry and the population as a whole.

ECTS: **3.00**

Teaching hours: 30
Lectures: 20
Seminar: 6
Field exercises: 4

Grading

Sufficient (2): 60-70%
Good (3): 71-80%
Very good (4): 81-90%
Excellent (5): 91-100%

Lecturer

- Prof. Zvonimir Prpić, PhD
- Prof. Ivan Vnučec, PhD

Associate teacher for exercises

- Prof. Miljenko Konjačić, PhD

Associate teacher for seminars

- Prof. Zvonimir Prpić, PhD
- Prof. Ivan Vnučec, PhD

Type of course

- Graduate studies / Environment, agriculture and resource management (Compulsory course, 3 semester, 2 year)

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General competencies

Upon completing this course, students should have:
- ability to recognize potential risks for environment pollution coming from commercial livestock production activities and to minimize those using adequate techniques, methods and procedures;
- distinguish between different farming systems in relation to level of animal productivity ant its interaction with environment;
- recognize acceptable measures and approaches considering waste management to ensure sustainability of livestock production.

Types of instruction

- Lectures
- Field work

  A tour of farms with livestock production based on indigenous breeds
- Seminars

  The themes of the seminar are related to the global significance of the livestock sector, the pollution potential of livestock production systems and current European legislation considering pollution from livestock production systems. Students independently prepare a seminar paper and present it.

Learning outcomes

Learning outcome	Evaluation methods
Investigate the significance of livestock production systems in global food production.	Participating in discussions, work tasks during classes, seminars, final exam
Identify key factors relating to interaction between livestock production and the environment.	Participating in discussions, work tasks during classes, seminars, final exam
Investigate the contribution of pollution from livestock production systems to contamination of natural resources and global greenhouse-gas emissions.	Participating in discussions, work tasks during classes, seminars, final exam
Analyze and discuss the importance of autochthonous livestock breeds in sustainable production systems.	Participating in discussions, work tasks during classes, seminars, final exam
Explain the need, and be familiar with methods for waste management.	Participating in discussions, work tasks during classes, seminars, final exam

Working methods

Teachers' obligations

Regular maintenance of lectures and exercises. Dissemination of the seminar themes, consultations and supervision of seminar presentations. Preparing teaching materials and exam literature, maintenance of a final (written and oral) exam.

Students' obligations

The student is required to attend exercises and seminars. Also, a student is obligated to prepare and present a seminar.

Methods of grading

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Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Total number of average student workload	ECTS
Written and oral exam	80%	<60% 61-70% 71-80% 81-90% 91-100%	Insufficient (1) Sufficient (2) Good (3) Very good (4) Excellent (5)	24	60	2
Writing and presentation the seminar	20%	<5 points 5 points 6-7 points 8-9 points 10 points	Insufficient (1) Sufficient (2) Good (3) Very good (4) Excellent (5)	6	30	1
Total	100%			30	60	3

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Weekly class schedule

1. Introduction. Livestock Production Systems L - Familiarizing with students' background knowledge on animal production. Course description and goals. Presentation of the learning outcomes. Description of intensive, extensive and organic livestock systems.
2. Global significance of the livestock sector S - Students will prepare seminars to give an overview of the current situation in world livestock production with emphasis on European region.
3. Global significance of the livestock sector S - Students will prepare seminars to give an overview of the current situation in world livestock production with emphasis on European region.
4. Environmental factors influencing the production of farm animals L - Physical aspects of an animal surroundings such as temperature, photoperiod, and ventilation influencing animal behaviour as well as livestock performance and productivity.
5. Environmental factors influencing the production of farm animals L - Physical aspects of an animal surroundings such as temperature, photoperiod, and ventilation influencing animal behaviour as well as livestock performance and productivity.
6. Animal - environment interactions L - Effects of livestock production on climate changes. Principles of sustainable livestock farming and the resultant gains in environmental sustainability.
7. Animal - environment interactions L - Effects of livestock production on climate changes. Principles of sustainable livestock farming and the resultant gains in environmental sustainability.
8. Liquid wastes and gasseous pollutants from farm animal enterprises L - Pollution of soils and watercourses by wastes from livestock production systems. Impact on water quality. Sources and problems caused by gaseous pollutants (methane production, losses of ammonia and others). Measures to prevent or reduce gaseous pollutants from farm animals.
9. Liquid wastes and gasseous pollutants from farm animal enterprises L - Pollution of soils and watercourses by wastes from livestock production systems. Impact on water quality. Sources and problems caused by gaseous pollutants (methane production, losses of ammonia and others). Measures to prevent or reduce gaseous pollutants from farm animals.
10. Role of autochthonous livestock breeds in sustainable production systems L - Sustainable use of marginal areas and preventing forest fires. Restoring and maintaining soil fertility through manure and nutrient recycling.
11. Importance of autochthonous livestock breeds in conservation of native agro-ecosystems L - Autochthonous livestock breeds and traditional animal products. Importance of conservation of autochthonous breeds in preserving traditional technologies and today's depleting biodiversity.
12. Importance of autochthonous livestock breeds in conservation of native agro-ecosystems F - Autochthonous livestock breeds and traditional animal products. Importance of conservation of autochthonous breeds in preserving traditional technologies and today's depleting biodiversity.
13. Importance of autochthonous livestock breeds in conservation of native agro-ecosystems F - Autochthonous livestock breeds and traditional animal products. Importance of conservation of autochthonous breeds in preserving traditional technologies and today's depleting biodiversity.
14. Legislation to prevent excessive pollutions from livestock production systems S - Students will search internet databases for current European legislation considering pollution from livestock production systems and present current situation in that area by themselves.
15. Final Exam L

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Obligatory literature

1. Clive Phillips, David Piggins, Farm Animals and the Environment, 1992. Publisher: CAB International, Wallingford, UK.

Recommended literature

1. Thomas G. Field, Robert E. Taylor, Scientific Farm Animal Production, 10th edition, 2011. Publisher: Pearson Education Books Limited, UK. ISBN: 0-13-511149-8.
2. R. Ewbank, F. Kim-Madslien, C. B. Hart, Management and Welfare of Farm Animals, 4th edition, 1999. Publisher: Universities Federation for Animal Welfare, Wheathampstead, UK. ISBN: 1 900630 00 1.
3. Kim - Anh Tempelman, Ricardo A. Cardellino, People and Animals, 2007. Publisher: FAO, Rome. ISBN: 978-92-5-105684-4.

Similar course at related universities

- Sustainable livestock farming in the environment (University of London, UK)

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