COURSE DESCRIPTION

COURSE DETAILS

Title (of the course): **MEJORA GENÉTICA PARA LA CRÍA Y SALUD ANIMAL**
Code: 101483
Degree/Master: **GRADO DE VETERINARIA** Year: 2
Field: MEJORA GENÉTICA PARA LA CRÍA Y SALUD ANIMAL
Character: OBLIGATORIA Duration: FIRST TERM
ECTS Credits: 6.0 Classroom hours: 60
Face-to-face classroom percentage: 40.0% Study hours: 90
Online platform:

LECTURER INFORMATION

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PREREQUISITES AND RECOMMENDATIONS

Prerequisites established in the study plan
Have passed the subject of Genetics.

Recommendations
None specified

INTENDED LEARNING OUTCOMES

CE54

OBJECTIVES

Students should know the theoretical bases of the applications of genetics to animal improvement and health programmes and the technology of genetic improvement of the main animal productions and the conservation of animal genetic resources.

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CONTENT

1. Theory contents

Part One: Theoretical basis for the applications of genetics in breeding and animal health programmes.

1. The role of genetics in veterinary practice. Genetic improvement in the field of animal production.
2. Genetic nature of qualitative and quantitative traits. Phenotypic value and its components.
3. Repeatability and Heritability. Genetic correlations.
4. Complications of genetic models: Maternal effects, permanent environmental effect. Dominance and imprinting. Correlation and interaction between genotype and environment.
5. Selection methods for single-character and multi-character. Response to selection.
6. Genetic evaluation. Selection indices. BLUP and derived methods. Multi-character evaluation.
7. Marker-assisted selection and genomic selection.
8. Inbreeding. Inbreeding and inbreeding depression. Crossbreeding and heterosis.
9. Genetic basis of diseases of genetic origin. Diseases of simple and complex determinism.
10. Combating genetic diseases. Carrier detection. Selection against carriers.
11. Genetic resistance to diseases: classical and biotechnological methods.
12. Animal genetics research.

Part Two: technology of genetic improvement of the main animal productions and conservation of animal genetic resources

13. Genetic improvement of the morphological traits. Zoometry, body components and lineal assessment.
14. Genetic improvement of milk production and cheese-making ability of cattle.
15. Genetic improvement of milk production and cheese production in small ruminants.
16. Meat genetics. Genes related to meat quality.
17. Genetic improvement of beef production.
18. Genetic improvement of small ruminant meat production.
19. Genetic improvement of meat production in industrial white pigs. Genetic improvement of Iberian pigs.
20. Genetic improvement of poultry meat production. Genetic improvement of egg production.
21. Genetic improvement of rabbits. Genetic improvement of wool, hair and fur.
22. Genetic improvement of aquaculture species.
23. Genetic improvement of equids.
24. Behavioural breeding. Canine breeding. Fighting bull breeding. Improvement of fighting cocks.
25. Organisation of the conservation of animal genetic resources.
26. In situ and Ex situ methods for the conservation of genetic resources.
27. Administrative organisation of animal breeding and conservation. National and international legislation. International organisations. European Union, ICAR. FAO.

2. Practical contents

Medium-sized group practices (6 groups, 15 h/group).

1. Problems. Resolution and discussion of exercises and practical cases (5h/group).
2. Genetic counselling. Case studies: determination of genetic origin and detection of carriers (2h/group).
3. Search for genes related to diseases in international databases (2h/group).
4. Participatory analysis of the development of improvement and conservation programmes (3 hrs/group).
5. Interpretation of catalogues of dairy cattle sires (1,5 h/group).
6. Interpretation of catalogues of stallions of other species (1,5/group h).

Small Group Practices (15 groups/12h per group):

1. Genetics of the coat in equids. Simulation of directed mating (3h/group).

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2. Simulation of selective processes in animal breeding: crossbreeding (3h/group).
3. Genetic evaluation of breeding stock: (1,5h/group).
4. Genetic evaluation of breeding stock: (1,5h/group).
5. Estimation of population parameters in conservation (3h/group).

SUSTAINABLE DEVELOPMENT GOALS RELATED TO THE CONTENT

Good health and well-being
Responsible consumption and production
Life on land

METHODOLOGY

General clarifications on the methodology (optional)

None specified.

Methodological adaptations for part-time students and students with disabilities and special educational needs

Particular considerations will be taken into account for part-time students and students with disabilities and special educational needs.

Face-to-face activities

Activity	Large group	Medium group	Small group	Total
Assessment activities	3	-	-	3
Case study	-	5	-	5
Group work (cooperative)	-	5	-	5
Lab practice	-	-	12	12
Lectures	30	-	-	30
Tutorials	-	5	-	5
Total hours:	***33***	***15***	***12***	***60***

Off-site activities

Activity	Total
Activities	25
Exercises	30
Information search	20
Reference search	15
Total hours	***90***

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WORK MATERIALS FOR STUDENTS

Case studies
Coursebook
Exercises and activities
Oral presentations
Placement booklet
References

EVALUATION

Intended learning	Exams	Laboratory Practice	Problem solving	Resource Bank
CE54	X	X	X	X
Total (100%)	***50%***	***20%***	***20%***	***10%***
Minimum grade	***0***	***0***	***0***	***0***

(*)Minimum mark (out of 10) needed for the assessment tool to be weighted in the course final mark. In any case, final mark must be 5,0 or higher to pass the course.

Attendance will be assessed?:

No

General clarifications on instruments for evaluation:

The final grade shall include:
- Self-assessment via Moodle with multiple-choice or true/false questions (10% of the final mark).
- A written exam which may include questions from all parts of the course with short answer questions, multiple choice questions or true/false questions (50% of the final mark) and problem solving and practical exercises related to theory or practice (25% of the final mark).
- A mark for practices (attendance and preparation of the practices notebook) which will account for 25% of the final mark.

In order to pass the course, a final mark of 5 or higher must be obtained.
The pass/fail grade is overall. Students who do not pass the subject in the January exam must retake the full exam in the February exam and, eventually, in the September exam.

Clarifications on the methodology for part-time students and students with disabilities and special educational needs:

The final grade will take into account the particular considerations of students who take the degree on a part-time basis, as well as for students with special needs.

Clarifications on the evaluation of the extraordinary call and extra-ordinary call for completion studies:

The pass/fail grade is overall. Students who do not pass the subject in the January exam must retake the full exam in the February exam and, eventually, in the September exam.
In accordance with the modification of the Official Academic Calendar for the academic year 2022-2023 (approved

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by the Governing Council, in the ordinary session of December 22, 2022; BOUCO 2022/01289 of 28/12/2022), the extraordinary call for students of 2nd enrollment or higher (first of the academic year 2023-2024) is transformed into the extraordinary call of September (last of the academic year 2022-2023).

Qualifying criteria for obtaining honors:

5% of the top marks with a value higher than 9

BIBLIOGRAPHY

1. Basic Bibliography

Material available on the Moodle site of the course

2. Further reading

Material available on the Moodle site of the course

COORDINATION CRITERIA

Common evaluation criteria
Common learning outcomes
Tasks deadlines

SCHEDULE

Period	Assessment activities	Case study	Group work (cooperative)	Lab practice	Lectures	Tutorials
1# Week	0,0	0,0	0,0	0,0	2,0	0,0
2# Week	0,0	0,0	0,0	0,0	2,0	0,0
3# Week	0,0	0,0	0,0	0,0	2,0	0,0
4# Week	0,0	0,0	0,0	0,0	2,0	0,0
5# Week	0,0	0,0	0,0	0,0	2,0	0,0
6# Week	0,0	3,0	0,0	0,0	2,0	0,0
7# Week	0,0	2,0	0,0	0,0	2,0	0,0
8# Week	0,0	0,0	2,0	0,0	2,0	2,0
9# Week	0,0	0,0	2,0	2,0	2,0	2,0
10# Week	0,0	0,0	1,0	2,0	2,0	1,0
11# Week	0,0	0,0	0,0	2,0	2,0	0,0
12# Week	0,0	0,0	0,0	2,0	2,0	0,0
13# Week	0,0	0,0	0,0	2,0	3,0	0,0

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Period	Assessment activities	Case study	Group work (cooperative)	Lab practice	Lectures	Tutorials
14# Week	3,0	0,0	0,0	2,0	3,0	0,0
Total hours:	***3,0***	***5,0***	***5,0***	***12,0***	***30,0***	***5,0***

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.