ESCUELA TÉCNICA SUPERIOR DE INGENIERÍA AGRONÓMICA Y DE MONTES

GRADO DE INGENIERÍA AGROALIMENTARIA Y DEL MEDIO RURAL

2024/25 YEAR

TECNOLOGÍA DE LA INFORMACIÓN, LA COMUNICACIÓN Y LOS SISTEMAS DE APOYO A LA DECISIÓN EN PRODUCCIÓN AGROGANADERA

Course details

Course name: TECNOLOGÍA DE LA INFORMACIÓN, LA COMUNICACIÓN Y LOS SISTEMAS DE APOYO A LA DECISIÓN EN PRODUCCIÓN AGROGANADERA
Code: 100987
Degree/Master: GRADO DE INGENIERÍA AGROALIMENTARIA Y DEL MEDIO RURAL **Year:** 3
Field: SISTEMAS DE PRODUCCIÓN, INFORMACIÓN E INNOVACIÓN EN AGROGANADERÍA
Character: OBLIGATORIA **Duration:** FIRST TERM
ECTS Credits: 6.0 **Classroom hours:** 60
Face-to-face classroom percentage: 40.0% **Study hours:** 90
Online platform: https://moodle.uco.es/

Coordinating teacher

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Brief description of the contents

Theoretical bases of the digitalisation of the agricultural and livestock sector. Practice in analysing data from sensors using spreadsheets (Excel) and programming languages (R). Introduction to hardware design (Arduino).

Prerequisites

Prerequisites established in the study plan

None

Recommendations

None specified

Study programme

1. Theory contents

Topic 1. Historical evolution of the role of information technologies in the agricultural and livestock sector.
Topic 2. Precision livestock farming.
Topic 3. Sensors for monitoring animal behaviour.
Topic 4. Introduction to data analysis using MS Excel.
Topic 5. Introduction to data analysis using R.
Topic 6. Introduction to hardware development using Arduino.
Seminar on the potential of computer vision in animal production.

2. Practical contents

Case study 1: Analysis of data from a precision livestock sensor (accelerometer or GNSS) to characterise animal behaviour (calving, heat or disease detection) using MS Excel.
Case study 2: Analysis of data from a precision livestock sensor (accelerometer or GNSS) to characterise animal behaviour (calving, heat or disease detection) using R.
Practical hardware development using Arduino.

Bibliography

Wickham, H and Grolemund, G. (2017). R for data science. Ed. O'Reilly Media.
Van der Kooij, L. (2021). Precision technology and sensor applications for livestock farming and companion
animals. Ed. Wageningen Academic Press.
Nussey, J et al. (2018). Arduino for dummies.
R para principiantes. https://bookdown.org/jboscomendoza/r-principiantes4/

Methodology

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

There are no adaptations for part-time students. For students with disabilities and special educational needs, the practical content of the subject will be adapted according to the student's needs.

Face-to-face activities

Activity	Large group	Small group	Total
Information processing activities	30	-	30
Practical experimentation activities	-	10	10
Projects based on the course contents	20	-	20
Total hours:	***50***	***10***	***60***

Off-site activities

Activity	Total
Exercise and problem solving activities	10
Information processing activities	80
Total hours	***90***

Results of the training and learning process

Knowledge, competencies and skills

CB1 Understanding fundamental, scientific and technological aspects and developing the ability to learn continuously and adapt to new situations and changing environments.

CB2 Demonstrating the ability to solve problems by being creative, using initiative, applying methodology and thinking critically

CB4 Demonstrating the ability to research and use legislations related to your field of work

CB5 Demonstrating the ability to develop your performance, committing yourself socially, ethically and environmentally in step with the reality of human and natural surroundings

CB6 Demonstrating the ability to work in multidisciplinary and intercultural teams

CU1 Proving the ability to use and master a foreign language

CU2 Improving user-level skills in ICT

CU3 Encouraging an active job search and the ability to become an entrepreneur

CEC9 Demonstrating the ability to recognise, understand and use the principles of making decisions by using available work resources in multidisciplinary groups

CEC10 Demonstrating the ability to recognise, understand and use the principles of technology transfer, understanding, interpreting, communicating and adopting advances in the field of agriculture

CEEA1 Demonstrating the ability to recognise, understand and use the principles of animal production technology, animal anatomy, animal physiology, animal production, protection and development systems, animal production techniques, and animal genetics and enhancement

CEEA3 Demonstrating the ability to recognise, understand and use the principles of agricultural engineering, charging agricultural operating machines, irrigation systems, constructing farming installations for the health and wellbeing of animals

CEMC2 Demonstrating the ability to recognise, understand and use the principles of animal production technology, nutrition, hygiene and animal production systems, biotechnology, animal enhancement and animal products

Assessment methods and instruments

Intended learning outcomes	Attendance checklist	Means of practical execution	Students assignments
CB1	X	X	X
CB2	X	X	X
CB4	X	X	X
CB5	X	X	X
CB6	X	X	X
CEC10	X	X	X
CEC9	X	X	X
CEEA1	X	X	X
CEEA3	X	X	X
CEMC2	X	X	X
CU1	X	X	X
CU2	X	X	X
CU3	X	X	X
Total (100%)	***10%***	***80%***	***10%***
Minimum grade (*)	***0***	***4***	***4***

(*)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.

General clarifications on instruments for evaluation:

In order to pass the subject, it will be necessary to obtain a grade of more than 4 in the assigned tasks and an average grade of more than 5.

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

In the case of students with special educational needs, adjustments will be made to the assessment systems according to the needs of the student.

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

In order to pass the subject, it will be necessary to obtain an average grade above than 5.

Qualifying criteria for obtaining honors:

Scores above 9 on all graded assignments. Attendance above 80%.

Sustainable development goals

Zero hunger
Quality education
Industry, innovation and infrastructure
Life on land

Other Faculty

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The methodological strategies and the evaluation system contemplated in this Teaching Guide will respond to the principles of equality and non-discrimination and must be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required. Students must be informed of the risks and measures that affect them, especially those that may have serious or very serious consequences (article 6 of the Safety, Health and Welfare Policy; BOUCO 23-02-23).