Universitat de Lleida

DEGREE CURRICULUM

ANIMAL FEED MANUFACTURING

Coordination: ALVAREZ RODRIGUEZ, JAVIER

Academic year 2022-23

ANIMAL FEED MANUFACTURING 2022-23

Subject's general information

Subject name	ANIMAL FEED MANUFACTURING
Code	100332
Semester	1st Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Double bachelor's degree: Bachelor's Degree in Veterinary Medicine and Bachelor's Degree in Science and Production	5	OPTIONAL	Attendance-based

Course number of credits (ECTS)	6
Type of activity, credits, and groups	

Activity type	PRACAMP	PRALAB	PRAULA	TEORIA
Number of credits	0.5	0.2	0.8	4.5
Number of groups	1	1	1	1

Coordination	ALVAREZ RODRIGUEZ, JAVIER
Department	ANIMAL SCIENCE
Important information on data processing	Consult this link for more information.
Language	Spanish

ANIMAL FEED MANUFACTURING 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ALVAREZ RODRIGUEZ, JAVIER	javier.alvarez@udl.cat	3	
SERADJ PAKNIYATJAHROMI, AHMAD REZA	reza.seradj@udl.cat	3	

Learning objectives

Establish feed ingredient restrictions in feed formulation computer programs.

Analyze fluctuation situations in the feed market.

Know the interdependence of the groups of raw materials and their level of substitution.

Analyze with perspective the legislative changes on the use of additives in animal feed. Prepare reports on feed mills.

Plan extensions or modifications in feed factories.

Study and define plans to reduce the environmental impact in feed factories.

Learning outcomes:

Identify the concept of nutrition and formulation of rations.

Analyze the classification of foods and the nutritional characteristics that define them.

Identify the different types of ingredients and additives.

Learn about the antinutritive factors that raw materials and their conditioning factors may contain in different animal species.

Analyze the effects of the different phases of the compound feed manufacturing process.

It analyzes the feed manufacturing schemes and the various technologies that can be used in the different processes.

It is able to establish a plan to minimize the environmental impact in feed mills.

Competences

Basic skills:

• CB1 Possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although it is supported by advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of your field of study.

• CB2 Apply their knowledge to their work or vocation in a professional way and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.

• CB3 Ability to gather and interpret relevant data (usually within their study area) to make judgments that include a

reflection on relevant social, scientific or ethical issues.

• CB4 Be able to transmit information, ideas, problems and solutions to both a specialized and a non-specialized audience).

• CB5 Know how to develop those learning skills necessary to undertake further studies with a high degree of autonomy.

• CB9: Use the basic work methodologies referring to the indicated disciplines.

• CB10: Recognize and know how to apply the basic techniques of livestock experimentation and know how to interpret their results.

Transversal Competences:

• CT1 Acquire an adequate oral and written comprehension and expression of Catalan and Spanish

• CT2 Acquire a significant command of a foreign language, especially English.

• CT3 Acquire training in the use of new technologies and information and communication technologies

• CT4 Acquire basic knowledge of entrepreneurship and professional environments

• CT5 Acquire essential notions of scientific thought

• CT6 Analyze specific situations, define problems, make decisions and implement action plans in search of solutions.

• CT7 Apply acquired knowledge to real situations, adequately managing available resources.

• CT8 Interpret studies, reports, data and analyze them numerically.

• CT9 Select and manage the available written and computerized sources of information related to professional activity. •

CT11 Manage individual and team work

• CT12 Acquire comprehensive training.

• CT14 Know and apply the scientific method in professional practice.

Subject contents

Lectures (45 hours)

1. Introduction. Classification of compound feed. Evolution of the industry.

2. Ingredients: Cereals and cereal by-products. Vegetable protein concentrates. Animal protein concentrates, dairy products, fats and oils. Fibrous foods, molasses and stillage, fruits and tubers. Minerals

3. Nutritional additives. Technological, zootechnical and organoleptic additives, antiparasitics.

4. Structural organization chart of a feed mill. Reception, transportation and storage of ingredients and additives.

5. Grinding. Types of mills and basic elements. Granulometries.

6. Dosage of ingredients and additives. Incorporation of liquids.

7. Mix. Mixer types, homogeneity and performance.

8. Granulation and conditioning. Types of granulator. Process parameters. Expander and extrusion.

9. Energy efficiency and reduction of the environmental impact in feed mills.

10. Dry and wet feed for pets.

11. Feed quality control: Specifications and analytical techniques.

12. Legislative aspects of feed labeling.

Practices (15 hours)

Linear programming: Feed formulation reminder. Application of different restrictions: nutrients and ingredients (Informatics).

Case study on feed manufacturing technology and additive stability.

Evaluation of ingredients and chemical composition of feed for dogs (pet food).

Design of a vitamin-mineral premix. Calculation of the electrolyte balance.

Feed quality control: Recognition and microscopy. Granule Quality, Particle Size and Crumbs (Laboratory)

Visit to feed factory

Evaluation

	%
Examen 1 (31/10/22, 12-14 h)	25
Examen 2 (18/01/23, 12-14 h)	25
Preguntas sobre la visita a fábrica de pienso en examen 2	10
Ejercicio de formulación de piensos el día del examen 2	10
Reconocimiento macro- y microscópicos	10
Ejercicio adicional de formulación de piensos	10
Diseño del corrector vitamínico-mineral y balance electrolítico	10
	100

Bibliography

Angulo, E., Puchal, F. 1995. Tecnología de fabricación de piensos. Ed. Paperkite. Lleida.

Angulo, E., N. Buira y L. Ruestes. 2004. Técnicas de gestión ambiental en fábricas de pienso. Ed. Fundació Catalana de Cooperació. Lleida.

FAO e IFIF. 2014. Buenas prácticas para la industria de piensos – Implementación del Código de Prácticas Sobre Buena Alimentación Animal. Manual FAO de producción y sanidad animal. No 9. Roma.

Madrid, A. 2015. Piensos y alimentos para animales. AMV Ediciones.

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