



ACADEMIC YEAR: 2017/2018

COURSE: **ANIMAL NUTRITION AND FEEDING**

TYPE OF EDUCATIONAL ACTIVITY: **Characterizing**

TEACHER: **DI TRANA ADRIANA C. L.**

e-mail: **adriana.ditrana@unibas.it**

website:

phone: **+39 0971 205021**

mobile (optional):

Language: **ITALIAN**

ECTS: (lessons e tutorials/practice) 8 ECTS lesson 1 ECTS tutorials/practice	n. of hours: (lessons e tutorials/practice) 64 hours lessons 16 hours tutorials/practice	Campus: Potenza Dept./School: Scuola di Scienze Agrarie, Forestali, Alimentari, ed Ambientali (SAFE) Program: Agricultural Technologies	Semester: II semester
--	--	--	---------------------------------

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Objectives of the Course “Animal Nutrition and Feeding” are: (i) provide students with basic knowledge of animal nutrition and animal feeding; (ii) provide students with tools for evaluating food and raw materials used in animal feeding; (iii) provide tools for the definition of balanced rations for animal in order to ensure the health and well-being of the animal and the healthiness of the productions.

- **Knowledge and understanding:** The student must demonstrate knowledge of the theoretical bases and practices regarding classification, chemical evaluation, physiological and nutritional evaluation of feed for animal. Knowledge of the criteria and methods for assessing the feed intake and the nutritional requirements of animals of zootechnical interest. Knowledge of feeding strategies and techniques for animals in production. Basic knowledge of the definition of balanced diets for animals with different production.
- **Applied knowledge and understanding skills:** Students must demonstrate to be able to analyze the farm environment for animal feed management and food management, to identify the weak points and the strengths of feed management in different farm realities, to work out the appropriate solutions for optimizing feeding, production, economic and animal health and welfare management of animals, and to use all theoretical and practical tools he/she learned during the course in order to optimize the achievement of the goals set.
- **Autonomy of judgment:** The student must independently be able to evaluate and choose the feeding strategy that is appropriate to the type of animal in production.
- **Communicative Skills:** The student must be able to demonstrate the knowledge and skills he/she learned in a logically well-organized, easily comprehensive, terminologically correct explanation supported by graphs and tables.
- **Ability to Learn:** The student must independently be able to collect, acquire, organize and re-elaborate, materials and information received during the front lessons or obtained by consulting texts available online.

PRE-REQUIREMENTS: The knowledge provided by the course of Anatomy and Physiology of Animals, General Chemistry, Inorganic and Organic Chemistry, Mathematics and Physics are recommended.

SYLLABUS

The course is divided in 9 blocks.

BLOCK 1 (8 HOURS) Chemical composition of feed: Proteins. Lipids. Structural and Non-Structural Carbohydrates. Vitamins. Minerals. Non-protein Nitrogen Sources. Water.

BLOCK 2 (8 HOURS) Feed Utilization: Digestive tract physiology in polygastrics and monogastrics. Digestibility and degradability. Energy metabolism and Protein metabolism.

BLOCK 3 (8 HOURS) Analytical systems for evaluation of feeds: Method Weende. Van Soest method. Cornell Net Carbohydrate Protein System (CNCPS) method

BLOCK 4 (8 HOURS) Expression systems of protein value and energy value of feeds: Protein value expressed as Biological Value (VB), Digestible Protein. Digestible Protein in the Intestine. Metabolizable Protein. Energy value expressed as Milk Forage Unit, Meat Forage Unit, Net energy for lactation, Total Digestible Nutrients.



BLOCK 5 (8 HOURS) Feeding behavior and regulation of feed intake: Factor affecting feed intake. Feeding behavior. Estimation methods of feed intake. Techniques of feed distribution. Body Condition Score. Fecal score.

BLOCK 6 (8 hours) Nutrient requirements: Criteria and methods for estimating animals requirements of energy, protein, lipids, minerals, vitamins, carbohydrates structural, non-structural carbohydrates and water. Requirements for maintenance and gain, lactation, pregnancy, growth and activity.

BLOCK 7 (8 HOURS) Livestock feed: Classification and identification of the main types of animal feed. Assessment of nutritional and dietary quality of green fodder, hay, silage, by-products, cereal grains, legume grains. Classification as energy sources, protein supplements, roughages and feed additives.

BLOCK 8 (8 HOURS) Diet Formulation: Criteria and methods for planning and execution of diet formulation for different classes of livestock.

BLOCK 9 (16 HOURS exercises): Applications: Guided technical visits to livestock and feed mill companies. Guided technical visits to chemical laboratory for chemical analysis of feed. Solving exercises under supervision on the calculation of UFL, UFC of different feed, calculation of dry matter intake, calculation of nutrition requirements of several classes of animals. Solving exercises on the diet formulation / rations using excel sheet. Vision of diet formulation by open access programs.

TEACHING METHODS

The course is arranged as follows:

- Theoretical lessons on all subjects of the course (64 hours);
 - Tutorials/practice (16 hours)
 - Guided visit at the Laboratory "Chimico Bromatologico" to observe the procedures for feed chemical analysis (3 hours)
 - Technical visit at livestock farms of sheep, goats and cows (4 hours)
 - Technical visit at feed mill (2 hours)
 - Classroom tutorials for the calculation of nutritional value of feed, feed intake and for the formulation of diets for animals (7 hours).
-

EVALUATION METHODS

The aim of the examination is to test the level of achievement of the previously mentioned educational goals and expected learning outcomes.

The exam is divided into 2 parts and takes it place on the same day:

- an oral examination on each block indicated in "Course content", will also be evaluated for their ability to link and compare different aspects covered during the course; to pass the test it is necessary to acquire at least 18 points out of 30;
- discussion of a practical project concerning formulation of a diet for an assigned type of animal production; to pass the test it is necessary to acquire at least 18 points out of 30;

The final grade is the average of the two scores.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

TEXTBOOK

- Antongiovanni M., Gualtieri M., 1998, Nutrizione e alimentazione animale, Edagricole, Bologna;
- Betti S. e Pacchioli M.T., 1994, L'alimentazione della vacca da latte. – CRPA, Edizioni l'Informatore Agrario;
- Capitolo "Determinazione del valore nutritivo" di G. Piva, pagine 39-50 del libro AIA 1995. Valutazione degli alimenti e dello stato metabolico nutrizionale dei ruminanti. AIA, Roma.
- Cevolani D. 2014. Prontuario degli alimenti per la vacca da latte ed il bovino da carne. 85 schede per valutare le materie prime. Edagricole, Bologna.
- Monetti P.G. 2000. Allevamento dei bovini e dei suini. Cristiano Girarldi Editore, Ozzano dell'Emilia (BO)

TEXTS DEEPENING

- NRC: Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001. The National Academies Press;
- Alimentation des Bovins, Ovins et Caprins: les Tables INRA 2010. Octobre 2010, Éditions Quae.
- Pulina G., 2001; L'alimentazione degli ovini da latte. Avenue media. Bologna.
- Cannas A. e Pulina G. 2005; L'alimentazione della capra da latte. Avenue media. Bologna.
- Succi G. e Hoffmann I. 1993; La vacca da latte. Città Studi, Milano

ON-LINE EDUCATIONAL MATERIAL

- Alimenti:<http://erclub.vet.unibo.it/jb/bd/alimenti/>
-



UNIVERSITÀ DEGLI STUDI DELLA BASILICATA

SAFE - SCUOLA DI SCIENZE AGRARIE, FORESTALI, ALIMENTARI ED AMBIENTALI

➤ Open access programs

INTERACTION WITH STUDENTS:

At the beginning of the course, after describing the objectives, the program and the verification procedures, the teacher provides students educational materials. Simultaneously, he collects a list of students, together with your name, freshman, email and / or mobile phone.

Consulting hours

<i>Day</i>	<i>FROM (hour)</i>	<i>TO (hour)</i>	<i>AT</i>
MANDAY	16:30	18:30	TEACHER OFFICE
TUESDAY	16:30	18:30	TEACHER OFFICE
WEDNESDAY	16:30	18:30	TEACHER OFFICE
THURSDAY	16:30	18:30	TEACHER OFFICE

Over time weekly meeting, the teacher is available at all times for a contact with students through email: adriana.ditrana@unibas.it

EXAMINATION SESSIONS (FORECAST)¹

23/02/2017, 23/03/2017, 20/04/2017, 25/05/2017, 22/06/2017, 31/07/2017, 21/09/2017, 19/10/2017, 23/11/2017, 14/12/2017, 11/01/2018, 22/2/2018, 15/3/2018, 12/4/2018

SEMINARS BY EXTERNAL EXPERTS YES X NO

FURTHER INFORMATION

BOARD EXAM

President: prof.ssa Adriana DI TRANA

Component: prof. Corrado PACELLI

Substitute: prof. Raffaele BONI

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.