

Code: 1522 Feed Manufacturing Technology**Degree:** 2nd cycle – Animal Production Engineering; Food Science and Engineering**Stream:** Food Science and Engineering - Food Processing**Curricular Year:** 1st**Semester Course:** 2nd**Credits:** 6 ECTS**Compulsory** (Animal Production Engineering)**Language:** Portuguese/English**Optional** (Food Science and Engineering/Food Processing)**Responsible:** Maria Madalena dos Santos Lordelo**Other lecturer(s):** -**Web Site:** <http://www.isa.utl.pt/home/node/3856>**1. Contact hours:****Lecture/Practicals 70 Others 14 Total 84****2. Objectives:**

Knowledge of the main feed ingredients utilized in animal feeds.

Understanding all the processes inside a feed mill.

Ability to improve the production efficiency in a feed mill.

Understanding the importance of quality control outside and inside the feed mill.

Understanding hay and silage preservation.

3. Programme:

Feeds in animal production. Overview of the portuguese and international feed industry. Feed ingredients used in compound feeds. Reception, quality control and storage of feed ingredients. Transport equipment inside a feed mill. Grinding and types of grinders. Mixing and types of mixers. Pelleting and expansion. Addition of liquid ingredients in feeds. Bagging, shipping and quality control of finished feed. The manufacture of feeds for fish. Good Manufacturing Practices and HACCP in feed manufacturing. Hay and silage preservation. Field trip to major feed mill.

4. Bibliography:**Main Bibliography**McElhiney, R. R. 1994. Feed Manufacturing Technology IV (4th ed). American Feed Industry Association, Virginia.

Orskov, E. R. 1988. Feed Science – World Animal Science. Elsevier Science Publishers. The Netherlands.

National Feed Ingredients Association (NFIA). 1990. Hay and Silage Management. Bolsen, K. K., Baylor, J. E., McCullough, M. E. (Eds.). North America, 150 pp.

Other BibliographyKellems, R. O. and D. C. Church. 2002. Livestock feeds and feeding (5th ed). Prentice Hall, New Jersey.

Woodford, M. K. 1984. The Silage Fermentation. Kaskin, A. I., Mateles R. I. (Eds.). NY, 320 pp.

5. Assessment:

Seminar – 30%

Written Exam – 70%

6. Estimated Workload:

168	Hours
-----	-------

7. Last Update:

14/7/2010
