Code: 1415 **Agricultural Buildings and Environmental Control**
Degree: 2nd cycle – Agriculture
Stream: Agriculture and Animal Production; Agricultural Engineering; Horticulture
Curricular Year: 2nd **Semester Course: 1st**
Credits: 6 ECTS **Compulsory** (Agricultural Engineering)
Language: Portuguese/English **Optional** (Agriculture and Animal Production; Horticulture)
Responsible: Jorge Ferro da Silva Meneses
Other lecturer(s): -
Web Site: http://www.isa.utl.pt/home/node/3810

1. Contact hours:
Lectures 35 **Lecture/Practicals** 35 **Others** 14 **Total** 84

2. Objectives:

Acquire basic knowledge on building materials and construction techniques. Analyse the environment and its control in greenhouses and other agricultural buildings in order to evaluate and design systems and equipment for ventilation, heating, shading and cooling. To analyse the main characteristics, lay-out and design of greenhouses, silos, cold stores and other the agricultural buildings, to allow their future management and design.

3. Programme:

Materials and building techniques for agricultural buildings: foundations, floors, walls and roofs. Greenhouse covering materials: films, nets and semi-rigid materials. Environmental control: specific issues for greenhouses and cold stores, instruments and techniques for measuring the environment, thermal insulation, thermal and mass balances, psychometric processes. Equipment and design of ventilation, heating, cooling and drying systems. Farmstead planning, phases and documents for a building project. Characteristics, dimensioning and design of greenhouses, silos, cold stores for fruits and vegetables, pack houses, and animal buildings.

4. Bibliography:

Main Bibliography

Albright, L.D., 1990. Environmental Control for Animal and Plants. American Society of Agricultural Engineers, St. Joseph, Michigan, 453 p.

Castilla, N., 2005. Invernaderos de Plastico, Tennología e Manejo. Mundi-Prensa, Madrid, 462p.

Loewer, O.J., Bridges, T.C. and Bucklin, R.A., 1994. On- Farm Drying and Storage. American Society of Agricultural Engineers, 560 p

Mazollier, J. et Millet, P., 2002. Concevoir et Aménager une Station Fruitière. Centre Technique Interprofessionel des Fruits et des Legumes, Paris, 167 p

Other Bibliography

Hanan, J.J., 1998. Greenhouses. Advanced Technology for Protected Horticulture. CRC Press LLC, Boca Raton, 684 p.

Lindley, J.A. and Whitaker, J.H., 1996. Agricultural Buildings and Structures. ASAE, St. Joseph, 636 p

Meneses, J.F., 1993. Elementos para Instalações Agrícolas. Associação dos Estudantes de Agronomia, Lisboa.

Wacquant, C., Sédilot, C., Gratraux, J. et Roux, P., 2000. La Construction des Serres et des Abris. Centre Technique Interprofessionel des Fruits et des Legumes, Paris, 207 p.

5. Assessment:

Daily work and attendance to the classes. Tests. Written final examination

6. Estimated Workload: 168 Hours

7. Last Update: 19/7/2010