COURSE LAYOUT

1. GENERAL

SCHOOL	School of Environment and Agricultural Engineering		
DEPARTMENT	Department of Natural Resources Development & Agricultural Engineering		
STUDY LEVEL	Undergraduate		
COURSE CODE	62	SEMESTER	6
COURSE TITLE	Physicochemical and Mechanical Properties of Agricultural Products		

INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS
Theory: Lectures,	4	4
Total	4	4

COURSE TYPE	Scientific Domain
PREREQUISITES	Thermodynamics, Transport Phenomena
LANGUAGE:	Greek
IS THE COURSE OFFERED For ERASMUS STUDENTS?	Yes
COURSE WEB PAGE	

2. LEARNING OUTCOMES

Learning Outcomes
This course provides advanced knowledge in the thermophysical, optical, and mechanical properties of agricultural products, which are essential for the design of refrigerated storage systems and the development of appropriate processing methods. By the end of the course, students will be expected to understand the characterization of these properties and the underlying physical principles governing them, as they are fundamental to the simulation and optimization of physical processes involved in the preservation and minimal processing of agricultural commodities.
General Competenses
- Search, analysis and synthesis of data and information, using the necessary technologies - Autonomous work - Project planning and management - Teamwork - Decision - making - Promotion of free, creative and deductive thinking - Design and management of related units

3. COURSE CONTENT

Physical characteristics of agricultural products (size, shape, mass, volume, density, specific gravity, porosity). Thermophysical properties. Optical properties (refractometry, spectroscopy, spectrometry, chromatography, chromatometry). Mechanical properties (texture, resistance to penetration, crispness, resistance to compression, elastic deformation, bruising, etc.). Moisture content in foodstuffs (isothermal curves, water activity). Hydrodynamic and aerodynamic characteristics, rheological properties, viscosity.

electrical properties. Measurement and control of gas permeation in packaging materials for fresh agricultural products.

4. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD	Face-to-face
USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES	Use of ICT in teaching and communication with students
TEACHING ORGANISATION	*Activity* / *Work Load* Lectures: 100 *Laboratory work+ practice* *Total contact hours and training (About 25 hours of study per ECTS)*: *100*
STUDENTS EVALUATION	I. Theory Final written Exam, of increasing difficulty, which may include: -Questions to develop a topic and Multiple-choice test -Exercise solving of graded difficulty.

5. SUGGESTED BIBILIOGRAPHY

- Online notes for laboratory exercises and lecture presentations.
- Book [133028050]: Unit Operations of Chemical Engineering, 7th Ed., McCabe-Smith-Harriott