



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Greenhouse Air Condition							
Course Code		ZTM608		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	7	Workload	180 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to provide a way to develop the agricultural production in order to generate more revenue per unit area of greenhouse cultivation techniques and greenhouse mechanization understanding of the latest technological developments, depending on the wishes of the plant for air conditioning of the greenhouse and problem-solving techniques.							
Course Content		Regulation of greenhouse air conditions: The main applications of heating the greenhouse, greenhouse heat requirements, the calculation of boiler heating surface and capacity, the main applications of the methods and the natural and forced ventilation of greenhouses, calculations of ventilation of greenhouses. Greenhouse cooling methods and main applications, Calculation of evaporative cooling systems. Artificial lighting in greenhouses.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Case Study, Individual Study					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Sera Mekanizasyonu. 2009. Yağcıoğlu, A. EÜZF Yayın No. 562. Bornova
2	Sera İklimlendirme Tekniği. 2008. Öztürk, H.H. Hasad Yayıncılık Ltd. Şti., P.K. 35 Ümraniye-34760-Istanbul Başçeğinçelik, A., Öztürk, H.H. 1996.
3	Seralarda ısıtma. Temav yayınları:1 (Çeviri) Adana Yüksel, A.N. 1995.
4	Sera yapım tekniği. 2. basım. Hasat yayıncılık İstanbul. Hellicson M.A. 1983. Ventilation of agricultural structures. ASAE

Week	Weekly Detailed Course Contents	
1	Theoretical	The importance of Greenhouse, overview of the greenhouse in the world and in our country, greenhouse construction.
2	Theoretical	The main greenhouse heating methods and applications
3	Theoretical	Greenhouse heat protection
4	Theoretical	Greenhouse heat requirements
5	Theoretical	Calculation of heating surface and boiler capacity.
6	Theoretical	Different regions of the greenhouse construction and greenhouse alternative methods for the calculation of the capacity of the heating surface and the heating boiler.
7	Intermediate Exam	Midterm Exam
8	Theoretical	Natural and forced ventilation methods and applications of greenhouses
9	Theoretical	Alternative calculation methods of ventilation of greenhouses and related calculations
10	Theoretical	Greenhouse cooling methods and main applications, calculation of evaporative cooling systems.
11	Theoretical	Artificial lighting in greenhouses and calculations.
12	Theoretical	Applications related to plant growth in greenhouses: Greenhouse soil preparation, planting, fertilization.
13	Theoretical	Applications related to plant growth in greenhouses: Greenhouse irrigation, harvesting, soil disinfection and special applications.
14	Theoretical	Site review of current practices in the area of greenhouse
15	Theoretical	Automation and control of greenhouses
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	3	70



Assignment	14	0	2	28
Term Project	3	0	20	60
Midterm Examination	1	10	1	11
Final Examination	1	10	1	11
Total Workload (Hours)				180
[Total Workload (Hours) / 25*] = ECTS				7
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To identify greenhouse constructions.
2	Understand the factors that affect greenhouses, air-conditioning (in the regulation of greenhouse air conditions)
3	To understand the thermodynamic equations of the greenhouse air-conditioning.
4	Solving problems depending on the wishes of the plant for air conditioning of greenhouse constructions.
5	Understanding the technological equipment and the use of new production techniques in greenhouse mechanization.

Programme Outcomes (Agricultural Machinery Doctorate)

1	Identification, formulation and solving the problems in the field of Agricultural Machinery
2	The ability to use modern engineering tools and techniques
3	The ability to use the information, which is obtained by following the scientific and technological developments, in the academic life and practice.
4	The ability to evaluate multi-faced relationship between them by understanding interaction among agricultural technology, soil, plants and animals
5	Professionalism and ethical responsibility
6	The ability to work in disciplinary and multi-disciplinary teams
7	The ability to communicate effectively
8	The ability to do research for accessing information and to use data base and other resources
9	The ability to do analyze and interpret the experimental results and the design of experiment
10	The ability to identify and interpret knowledge of current professional issues and events
11	The ability to get aware the universal and social effects of engineering solutions and applications
12	Accordance with the requirements of science and technology, ability to use scientific knowledge creative

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	5	5	5	5	5
P3	4	4	4	4	4
P4	4	4	4	4	4
P6	4	4	4	4	4
P7	4				
P10	4	4	4	4	4
P12	5	5	5	4	5

