



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Water and Energy Budget In the Soil-Plant-Atmosphere System							
Course Code		ZTY618		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	150 ( <i>Hours</i> )	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The objective of this course is to explain the effects on the circulation of water in soil-plant and atmosphere system							
Course Content		Plant water consumption and its definition, importance on irrigation planning studies, methods of measurement, effecting factors, energy balance, solar and net radiation, heat transfer, water balance in the root zone and its assesments, profile of soil water content, profile of hydraulic head, determination of evapotranspiration for different conditions							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)		Assoc. Prof. Ersel YILMAZ							

### Assessment Methods and Criteria

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

### Recommended or Required Reading

1	Güngör, Y., Erözel, A.Z., Yıldırım O., 2004. İrrigation (Sulama), Ankara Üniversitesi Ziraat Fakültesi Tarımsal Yapılar ve Sulama Bölümü, Yayın No: 1540, Ders Kitabı: 493, Ankara. - Kanber, R., 1999
2	Kay, M., 1989. "Surface Irrigation". Cranfield Pres, Oxford
3	Replote, J. A., Merrium, L.R., Swarner, L.R., Phelen, J.T., 1980. "Farm Water Delivery System, Design and Operation of Farm Irrigation Systems". Ed. M.E. Jensen. ASAE Monograph 3, St. Joseph, MI
4	Cuenca, R.H., 1989. "Irrigation System Design: an Engineering Approach". Prentice Hall, Englewood Cliffs, New Jersey

Week	Weekly Detailed Course Contents	
1	Theoretical	The mean and importance of irrigation
2	Theoretical	Benefits and history of irrigation
3	Theoretical	Soil-water-crop-atmosphere relations
4	Theoretical	Climate and soil factors
5	Theoretical	Soil water
6	Theoretical	Infiltration
7	Intermediate Exam	Midterm Exam
8	Theoretical	Evapotranspiration (ET)
9	Theoretical	The importance of ET in irrigation planning researches
10	Theoretical	The methods which are use to determine ET and effective factors on ET
11	Theoretical	Energy balance, solar and net radiation
12	Theoretical	Thermal transfer, water balance in the root environment, evaluating
13	Theoretical	The profile of soil water content, hydraulic profile
14	Theoretical	Determining ET under different conditions
15	Final Exam	Final Exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	6	3	126
Midterm Examination	1	8	2	10



Final Examination	1	12	2	14
Total Workload (Hours)				150
[Total Workload (Hours) / 25*] = <b>ECTS</b>				6
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Identifying the evapotranspiration
2	Understanding the importance of evapotranspiration in irrigation planning researches
3	Understanding the methods which are use to determine evapotranspiration and effective factors on evapotranspiration
4	Energy balance, solar and net radiation, thermal transfer, water balance in the root environment
5	Evaluating the profile of soil water content, hidrolic profile, determining ET under different conditions

### Programme Outcomes (Agricultural Structures and Irrigation Doctorate)

1	Ability to analyze, synthesize and evaluate different forms of scientific knowledge in the field of studies
2	Approach to information systematically, and gain skills related to their field the research methods
3	Innovative science to develop a scientific method or a method that is known to practice in their field
4	Ability to organize and manage the project and advanced scientific research
5	Advanced technologies, find solutions to engineering problems taking advantage of the software and model approaches
6	Creative, unbiased and critical thinking
7	A topic in the field of written, verbally and visually as the ability to express
8	Ability to publish in refereed journals National and international the results of studies

### 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	5	5	5	5	4
P4	5	5	5	5	4
P5	5	5	5	5	4
P6	5	5	5	5	4
P7	5	5	5	5	4
P8	5	5	5	5	4

