



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Nutrient Use Efficiency in Plants							
Course Code		ZTO622		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	154 ( <i>Hours</i> )	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		The subject of the course; ; To understand the differences between different plant species, genotypes and varieties of nutrients and their use strategies in order to obtain maximum product in agricultural production. For this purpose; (1) the intake efficiency of nutrients by plants; (2) the efficiency of distribution of nutrients between plant organs; and (3) the use of nutrients by plants.							
Course Content		What is the nutrient use efficiency? How to estimate the efficiency of nutrient use in plants? What are the factors affecting the development of BMKE in plants? Importance of soil factors. The importance of fertilizer factors. Importance of plant factors. Issues that need to be addressed when approaching the issue from an agricultural point of view. Biological approximation methods. Importance of climate factors.							
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	Crops as Enhancers of Nutrient Use: V.C. Baligar& R.R. Duncan (Eds.) Academic Press, San Diego, CA, 1990.
2	Plant Physiology. L. Taiz & Zeiger. Sinauer Assoc. Inc. US. (2010).
3	Principles of Plant Nutrition. 5th Edition. K. Mengel & E. A. Kirkby. ISBN-13:978-2000089.(2001).

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction
2	Theoretical	Estimation of nutrient utilization efficiency (BMKE) in plants
3	Theoretical	Estimation of nutrient utilization efficiency (BMKE) in plants
4	Theoretical	Development of BMKE in plants
5	Theoretical	Development of BMKE in plants
6	Theoretical	Soil factors
7	Theoretical	Fertiliser factors
9	Theoretical	Plant factors
10	Theoretical	Plant factors
11	Theoretical	Agricultural approach
12	Theoretical	Agricultural approach
13	Theoretical	Biological approach
14	Theoretical	Biological approach
15	Theoretical	Climate factors

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	5	2	98
Assignment	5	0	8	40
Midterm Examination	1	6	2	8



Final Examination	1	6	2	8
Total Workload (Hours)				154
[Total Workload (Hours) / 25*] = <b>ECTS</b>				6
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Define the concept of nutrition in plants
2	Define the concept of nutrient use efficiency in plants
3	To be able to define the interaction between environment and nutrient use efficiency
4	To be able to define the interaction between biological factors and nutrient use efficiency
5	To evaluate the new studies related to the development of plant nutrient use efficiency

### Programme Outcomes (Soil Doctorate)

1	To be able to apply the theoretical information achieved during the graduate study
2	To be able to collect data by scientific means, to evaluate and interpret
3	To be able to update himself continuously
4	To be able to assess the convenient analytical methods during the process of the scientific study
5	To be able to put forth solutions to soil use and plant development

### 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	3	3	3	3	5
P2	3	3	3	3	5
P3	3	3	3	3	5
P4	3	3	3	3	5
P5	3	3	3	3	5

