



AYDIN ADNAN MENDERES UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
FIELD CROPS
FIELD CROPS
FIELD CROPS MASTER
COURSE INFORMATION FORM

Course Title	Physiology of Plant Nutritional Disorders								
Course Code	ZTO501	Course Level			Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 (Hours)	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	In this course, visual diagnosis of mineral disorders (deficiencies and toxicities), factors affecting nutrient disorders, metabolic alterations in plants related with nutrient disorders and effects of mineral disorders on growth, yield and quality of plants are examined. Attendances gain skill to interpret physiological processes in plants in relation with mineral nutrient disorders.								
Course Content	Diagnosis of mineral disorders, factors affecting mineral nutrient disorders, metabolic alterations in plants related with nutrient disorders, effect of mineral nutrient disorders on growth, yield and quality of plants								
Work Placement									
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Discussion, Case Study, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Marschner, H., 1995. Mineral Nutrition Higher Plants. 2nd Ed. Academic Press. Amsterdam.
2	Mengel, K., Kirkby, A.E., 2001. Principles of Plant Nutrition. 5th Ed. Kluwer Academic Pub. Dordrecht.
3	Bergmann, W., 1998. Nutritional Disorders of Plants. Gustav Fischer Verlag Jena. Stuttgart.
4	Salisbury, F.B., Ross, C.W., 1992. Plant Physiology. 4th Ed. Wadsworth Pub. California.

Week	Weekly Detailed Course Contents	
1	Theoretical	Diagnosis of visual symptoms of mineral disorders of plants
	Preparation Work	Literature research
2	Theoretical	Factors (biotic and abiotic) affecting nutrient disorders
3	Theoretical	Physiology of N disorders in plants
	Preparation Work	Determination of homework
4	Theoretical	Physiology of P disorders in plants
	Preparation Work	Presentation and discussion
5	Theoretical	Physiology of K disorders in plants
	Preparation Work	Presentation and discussion
6	Theoretical	Physiology of Ca disorders in plants
	Preparation Work	Collecting samples
7	Theoretical	Mechanism of photooxidative damage in plants
	Preparation Work	Collecting samples
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Physiology of S disorders in plants
10	Theoretical	Physiology of Fe disorders in plants
11	Theoretical	Physiology of Mn disorders in plants
	Preparation Work	Collecting samples
12	Theoretical	Physiology of B disorders in plants
	Preparation Work	Presentation and discussion
13	Theoretical	Physiology of Zn disorders in plants
	Preparation Work	Presentation and discussion
14	Theoretical	Physiology of Cu disorders in plants
	Preparation Work	Determination of homework



15	Theoretical	The formation of nutritional disorders in plants, symptoms, and the differences
	Preparation Work	Seasonal project
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	14	0	2	28
Assignment	2	0	30	60
Term Project	1	0	40	40
Midterm Examination	1	0	14	14
Final Examination	1	0	30	30
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To be able to diagnose visual symptoms of mineral nutrient disorders (deficiencies and toxicities) of plants
2	To be able to comprehend the factors that affect mineral nutrient disorders in plants
3	To be able to explain physiology of macro (N,P,K,Ca,Mg and S) elements disorders in plants
4	To be able to explain physiology of micro (Fe,Zn;Mn,Cu,B and Mo) elements disorders in plants
5	To be able to interpret the relations among nutrient disorders and growth,yield and quality of plants

Programme Outcomes (Field Crops Master)

1	To be able to improve and deepen the level of expertise in field crops on the basis of the departments licenses qualifications.
2	To be able to recognize the subjects related to field crops, to be able to solve these and make interpretation.
3	To be able to have the skills of acting independently, to have power to decide and to create.
4	To be able to work in teams between departments
5	To be able to give briefing about latest information of Field Crops in written, oral and visual ways.
6	To be able to take responsibility for developing the new approaches and to formulate a solution facing unforeseen complex situations of applications,
7	To be able to defend the original opinions in both Turkish and in foreign languages by using these languages and communicating effectively.
8	To be able to contribute to science by producing knowledge for the aim of improving quality, efficiency and sustainability
9	To be able to apply breeding methods in order to improve new varieties for Field Crops.
10	To be able to maintain and select the appropriate statistical methods within the framework of the study, evaluation of scientific ethics; to convert the results into a report/dissertation and to offer them by producing scientific publications.

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	4	4	4	4	4
P2	4	4	4	4	4
P3	4	4	4	4	4
P4	4	4	4	4	4
P5	4	4	4	4	4
P6	4	4	4	4	4
P7	4	4	4	4	4
P8	4	4	4	4	4
P9	4	4	4	4	4
P10	4	4	4	4	4

