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

Course Title	Fertilizing Micro Nutrient in Plants								
Course Code	ZTO504		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	7	Workload	177 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	The objective of this course is to give basic informations about fertilizers, fertilization and aplication of convenient doses and forms of secondary plant nutrients.								
Course Content	Functions and importance of micro nutrients in plant nutrition. Uptake mechanisms by root and leaf, factors on micronutrient uptake. Diagnosis of deficiency or toxicity by visually and analysis methods. Practical application dose, methods and fertilizer type.								
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	Kacar, B. ve A. V. Katkat. 1999. Gübreler ve Gübreleme Tekniği.
2	Tisdale, S.L., W.L. Nelson and J.D. Beaton. 1985. Soil Fertility and Fertilizers. Macmillan Publishing Company. USA.
3	Havlin, J.L., Beaton, J.D., Tisdale, S.L., and Nelson, W.L. 1999. Micronutrients. In: Soil Fertility and Fertilizers: An Introduction to Nutrient Management: Sixth edition. Chapter 8. Prentice-Hall, Inc.
4	Mortvedt, J.J. 1991. Micronutrient fertilizer technology. In: Mortvedt, J.J., Cox, F.R., Shuman, L.M. and Welch R.M. (eds.). Micronutrients in Agriculture: Second Edition. Number 4 in the Soil Science Society of America Book Series. Chapter 14. Soil Science Society of America, Inc. Madison, Wisconsin, USA.

Week	Weekly Detailed Course Contents	
1	Theoretical	Plant nutrients and their classification
	Preparation Work	Literature research
2	Theoretical	Functions and importance of micro nutrients in plant nutrition. Critical values in plant and soil
	Preparation Work	Determination of homework
3	Theoretical	Micronutrient uptake by root
	Preparation Work	Presentation and discussion
4	Theoretical	Micronutrient uptake by leaf
	Preparation Work	Presentation and discussion
5	Theoretical	Micronutrient types, features, reactions in soil and compatibility
	Preparation Work	Presentation and discussion
6	Theoretical	Application methods of micronutrients
	Preparation Work	Presentation and discussion
7	Theoretical	Remaining effect of micronutrients applied to the soil
	Preparation Work	Presentation and discussion
8	Intermediate Exam	Midterm Exam
9	Theoretical	Practical application dose to the soil or plant and type of iron fertilizers
	Preparation Work	Presentation and discussion
10	Theoretical	Practical application dose to the soil or plant and type of manganese fertilizers
	Preparation Work	Presentation and discussion
11	Theoretical	Practical application dose to the soil or plant and type of boron fertilizers
	Preparation Work	Presentation and discussion
12	Theoretical	Practical application dose to the soil or plant and type of zinc fertilizers
	Preparation Work	Presentation and discussion

13	Theoretical	Practical application dose to the soil or plant and type of cupper fertilizers
	Preparation Work	Presentation and discussion
14	Theoretical	Practical application dose to the soil or plant and type of Mo fertilizers
	Preparation Work	Presentation and discussion
15	Theoretical	General revision
	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	20	40
Term Project	1	0	15	15
Midterm Examination	1	0	24	24
Final Examination	1	0	42	42
			Total Workload (Hours)	177
			[Total Workload (Hours) / 25*] = **ECTS**	7

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	To be able to explain micro nutrient fertilizers
2	To be able to explain secondary plant nutrients
3	To be able to explain basic principals of fertilization
4	Technical information and data to use in fertilizer recommendations
5	Compare methods of fertilization

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	5
P7	4	4	4	4	4
P8	4	4	4	4	4
P9	4	4	4	4	4
P10	4	4	4	4	4