



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Plant Nutrition							
Course Code		TBB204		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	Theory	2	Practice	2	Laboratory	0
Objectives of the Course		The objectives of the course is to teach the factors that affect the fertility of the soils and the techniques to increase and sustain the fertility							
Course Content		The uptake forms of essential nutrients and their metabolisms, deficiency and toxicity symptoms, recommendations for nutritional disorders							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Experiment, Discussion, Case Study, Problem Solving					
Name of Lecturer(s)		Assoc. Prof. Saime SEFEROĞLU, Lec. Mustafa Ali KAPTAN, Lec. Seçil KÜÇÜK KAYA, Prof. Mehmet Ali DEMİRAL							

### Prerequisites & Co-requisites

Prerequisite	TBB104
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### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

### Recommended or Required Reading

1	Kacar, B., Katkat, V., 2007. Bitki Besleme. Nobel Yay. 659 s.
2	Marschner, H. 1988. Mineral Nutrition of Higher Plants. Acad. Pres. 889 s.
3	Mengel, K., Kirkby, E.A. 1982. Principles of Plant Nutrition. Bern-Switzerland. 655s

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction The history of plant nutrition
	Practice	Introduction to department laboratory
2	Theoretical	Essential plant nutrients Basic principles on plant nutrient uptakes.
	Practice	How to take soil samples and pretreatments of soils
3	Theoretical	Nitrogen uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	How to take leaf samples amt pretreatments of leaves
4	Theoretical	Phosphorus uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	Preparation plant samples for analysis
5	Theoretical	Potash uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	Wet digestion
6	Theoretical	Sulphur uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	Dry digestion
7	Theoretical	Calcium uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	Nitrogen analysis in leaves
8	Intermediate Exam	Midterm exam
9	Theoretical	Magnesium uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	Phosphorus analysis in leaves
10	Theoretical	Iron uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	K,Ca analysis in leaves



11	Theoretical	Zinc uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations.
	Practice	Na,Mg analysis in leaves
12	Theoretical	Manganese uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations .
	Practice	Fe,Cu analysis in leaves
13	Theoretical	Boron uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations.
	Practice	Mn,Zn analysis in leaves
14	Theoretical	Copper and Molibdenium uptake on plant nutrition Their metabolisms Their interactions with the other plant nutrients , deficiency, toxicity and their eliminations
	Practice	B analysis in leaves
15	Theoretical	Sodium and Chlore uptake on plant nutrition Its metabolism Its interactions with the other plant nutrients , deficiency, toxicity and their eliminations .
	Practice	Assesment of analyze results
16	Practice	Practice exam
	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	14	0	2	28
Midterm Examination	1	0	20	20
Final Examination	1	0	24	24
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = <b>ECTS</b>				4

\*25 hour workload is accepted as 1 ECTS

### Learning Outcomes

1	To be able to express fundamentals of plant nutrition and being able to evaluate this knowledge
2	To be able to identify, conserve ,learn the techniques to maintain the sustainability of the soil and other natural resources
3	To be able to determine soil fertility and learn fertilization
4	To be able to talk about the methods of soil fertility assessment
5	Being able to decide on the ways to increase soil fertility

### Programme Outcomes (Agricultural Biotechnology)

1	To be able to develop skills in identifying, modeling and solving problems in agricultural biotechnology
2	To be able to synthesize life and engineering sciences for the effective resource planning of agricultural biotechnology applications
3	To be able to interpret about living organisms structure, metabolic and physiological processes in order to propose biotechnological solutions to the agricultural problems
4	To be able to analyze genomic, metabolomic and proteomic information via bioinformatic tools.
5	To have the ability to analyze collected data and interpret the results.
6	To have the ability of individual working ability and to make independent decisions, to work in inter-disciplinary and interdisciplinary teamwork, to communicate by expressing their ideas orally and in writing, clearly and concisely
7	To have the awareness of professional liabilities and ethics
8	To be able to follow current national and international problems

### 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	4	4	3	4
P2	4	3	3	4	3
P3	3	3	3	3	3
P4	4	4	4	4	4
P5	5	3	5	4	5
P6	4	4	4	5	4
P7	3	5	3	3	3



P8	3	3	4	3	4
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