



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Microbiological Dynamics of Soil							
Course Code		ZTO616		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	8	Workload	203 ( <i>Hours</i> )	Theory	2	Practice	2	Laboratory	0
Objectives of the Course		The aim of this course is to teach to students defining physiological structure, growth properties and relationships of soil microorganisms.							
Course Content		Soil microorganisms, the factors affecting microbiological dynamic of soil, growth properties of soil microorganisms, relationships among soil organisms. Soil micro flora, bacteria, azotobacter, fungi, acid forming bacteria, C/N ratio, nitrogen bacteria, sulphur bacteria, iron bacteria, aerob cellulose decomposing bacteria, other microorganisms, catalase and dehydrogenase enzymes activity will be discussed.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Experiment, Demonstration, 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	Soil Microbiology, Ecology and Biochemistry. 2006. by Eldor Alvin Paul, Elsevier Science, 552pp
2	Methods in Applied Soil Microbiology and Biochemistry. 1995. Kassem Alef, Paolo Nannipieri Academic Pres, 576 pp
3	Soil organic matter dynamics and crop residue management. 1993. JL Smith, RI Papendick, DF Bezdicek, JM Lynch, FB ... - Marcel Dekker, Inc: New York.
4	Principles and Applications of Soil Microbiology. Sylvia, D.M., Fuhrmann, J.J., Hartel, P.G., Zuberer, D.A., 1998. Prentice-Hall Inc., New Jersey.
5	Introduction to soil microbiology, Alexander, M., 1977. 2nd ed. John Wiley & Sons, Inc., New York.
6	Laboratory Exercises in Microbiology, Pelczar, M.J., 1965,

Week	Weekly Detailed Course Contents	
1	Theoretical	Importance of soil's microbiological dynamic
	Preparation Work	Literature research
2	Theoretical	Microbiological dynamic of bacteria
	Preparation Work	Literature research
3	Theoretical	Microbiological dynamic of actinomycet
	Preparation Work	Literature research
4	Theoretical	Microbiological dynamic of fungi
	Preparation Work	Literature research
5	Theoretical	Microbiological dynamic of algae
	Preparation Work	Literature research
6	Theoretical	Soil factors affecting microbiological dynamic in soil
	Preparation Work	Literature research
7	Theoretical	Growth properties of soil microorganisms
	Preparation Work	Literature research
8	Intermediate Exam	Midterm Exam
9	Preparation Work	Literature research
10	Theoretical	Rhizosphere microbiology
	Preparation Work	Literature research
11	Theoretical	Mycorrhizal symbiosis
	Preparation Work	Literature research
12	Theoretical	Biological N <sub>2</sub> fixation



12	Preparation Work	Literature research
13	Theoretical	Microbial ecology
	Preparation Work	Literature research
14	Theoretical	Microbial ecology
	Preparation Work	Literature research
15	Theoretical	Practice Examination
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	15	30
Seminar	1	0	20	20
Laboratory	6	0	2	12
Midterm Examination	1	0	35	35
Final Examination	1	0	50	50
Total Workload (Hours)				203
[Total Workload (Hours) / 25*] = <b>ECTS</b>				8
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Able to define importance of soil microorganisms
2	Able to connect between soil quality and soil microbial activity
3	Able to make a list of the applications affecting microbial dynamic of soil
4	Capable of defining the role of soil microorganisms in soil-plant relationships
5	Able to apply soil microbiological analyses and evaluate the results

### 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	5	5	5	5	5
P2	4	5	4	5	5
P3	2	5	2	3	2
P4	3	5	3	3	5
P5	4	5	5	5	3

