AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Entomopathogenic Nematodes								
Course Code	BİO620		Couse Level	Third Cycle (Doctorate Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	To learn the use of entomopathogenic nematodes in biological control studies.								
Course Content	Biological control, nematodes , entomopathogenic nematodes, mechanism of entomopathogenic nematodes, mutualistic bacteria associated with entomopathogenic nematodes, host range of entomopathogenic nematodes, production of entomopathogenic nematodes, application areas of entomopathogenic nematodes in the world, biotic factors affecting entomopathogenic nematodes, formulation of entomopathogenic nmatodes, abiotic factors affecting entomopathogenic nematodes, ısolation of entomopathogenic nematodes, application methods of entomopathogenic nematodes, persistence of entomopathogenic nematodes in soil.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Demonstration								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	50
Laboratory	1	10

Recommended or Required Reading	
1	Gaugler, R. 2002. Entomopathogenic Nematology
2	Grewal, P., Ehlers, R.U., Shapiro-Ilan, D.I. 2005. Nematodes as biocontrol agents. 505 pp.

Week	Weekly Detailed Course Contents	
1	Theoretical	Biological Control
	Practice	Observation of insect pests and their harmfull effects in nature. Collecting of the insects.
	Preparation Work	Arrange of insect capture equipment
2	Theoretical	Nematodes
	Laboratory	Investigations on nematodes
3	Theoretical	Entomopathogenic nematodes
	Laboratory	Observations on entomopathogenic nematodes
4	Theoretical	Mechanism of entomopathogenic nematodes
	Laboratory	Relasing entomopathogenic nematodes to Galleria mellonella larvae
	Preparation Work	Available of Galleria mellonella larvae
5	Theoretical	Mutualistic bacteria associated with entomopathogenic nematodes
	Laboratory	Isolation of mutualistic bacteria
6	Theoretical	Host range of entomopathogenic nematodes
	Laboratory	Testing the efficiency of entomopathogenic nematodes against different insect pests
	Preparation Work	Collecting of the insects from nature
7	Theoretical	Production of entomopathogenic nematodes
	Laboratory	Production of entomopathogenic nematodes on different medium
	Preparation Work	Preparation of medium
8	Theoretical	Application areas of entomopathogenic nematodes in the world
	Laboratory	Nematode application to soil and turf areas
9	Theoretical	Biotic factors affecting entomopathogenic nematodes
	Laboratory	The effect of natural enemies on the nematodes
	Preparation Work	Collecting of the insects from nature
10	Laboratory	midterm
	Intermediate Exam	midterm

11	Theoretical	Formulation of entomopathogenic nmatodes
	Laboratory	Clay and sponge formulations of entomopathogenic nematodes
12	Theoretical	Abiotic factors affecting entomopathogenic nematodes
	Laboratory	The effect of temperature and moisture on nematodes
13	Theoretical	Isolation of entomopathogenic nematodes
	Practice	Collecting soil samples
	Laboratory	Isolation of entomopathogenic nematodes
	Preparation Work	Available of Galleria mellonella larvae
14	Theoretical	Application methods of entomopathogenic nematodes
	Laboratory	The methods of spraying and infected cadaver
	Preparation Work	Available of Galleria mellonella larvae
15	Theoretical	Persistence of entomopathogenic nematodes in soil.
	Laboratory	Pot experiments
	Preparation Work	Available of Galleria mellonella larvae

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	1	2	42
Lecture - Practice	2	2	6	16
Assignment	12	4	1	60
Laboratory	13	2	2	52
Reading	12	0	1	12
Midterm Examination	1	8	1	9
Final Examination	1	8	1	9
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	To learn what is biological control and understand its importance.
2	To learn life cycle of entomopathogenic nematodes.
3	To understand of importance of entomopathogenic nematodes in biological control.
4	To have knowledge about mutualistic bacteria associated with entomopathogenic nematodes
5	To learn methods of isolation, production and application of entomopathogenic nematodes.

Programme Outcomes *(Biology Doctorate)*

1	To have enough scientific background knowledge towards a specific study and research area
2	To have an ability to identify, evaluate and develop a solution for a problem on biological aspects
3	To be able to evaluate scientific observations and results of experiments using statistical analysis methods
4	To have basic skills in areas related to field of biological studies
5	To have the ability to develop cooperation with different disciplines with the high level of social communication required for studies
6	To have knowledge of technology and use of methods and means used in biological researches
7	To have an ethical understanding which will be a guide for their investigations and publications
8	For PhD; to have European Language Portfolio C1 general level language skill
9	To be able to present and discuss own research results in accordance with scientific discipline using technological tools in scientific research environments
10	To be able to detect and evaluate economic and social impacts of an own original research results
11	To be equipped with ability of carrying out independent study in biological field
12	To be able to publish at least one an international/national peer reviewed scientific paper and/or produce or interpret an original work related to biology in order to expand the frontiers of knowledge
13	To be able to develop new approaches or adaptations to be used in solving scientific and biological problems
14	To be able to develop new understanding and approaches in order to explain a new phenomenon or a biological event under investigation
15	To have abilities and experience to create new search area through inspiration gained from subject searched

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
P4	4	4	4	4	
P6					5
P13					4
P14					3
P15	5				4