



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Biocides							
Course Code		BİO649		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	4	Workload	94 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of the course is to give information about the concept of biocides, biocidal agents and chemistry, mechanisms of action on microorganisms, control use of biocides, biocide tests, the count of microorganisms, selection and proper use of biocides, biocidal products on the market							
Course Content		The mechanism of action of biocidal products on microorganisms, the selection of biocidal products, controlled use of biocidal agents, types of use of biocidal products, The relationship between human health and the environment of biocidal substances							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Experiment, Discussion					
Name of Lecturer(s)									

### Assessment Methods and Criteria

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

### Recommended or Required Reading

1	H.W. Rossmore – 2012. “Handbook of Biocide and Preservative Use”
2	Peter C. Zhu.2007. New Biocides Development:TheCombinedApproach of ChemistryandMicrobiology.
3	D. R. Karsa, David Ashworth. 2002.IndustrialBiocides: SelectionandApplication1.Peter C. Zhu.2007. New Biocides Development:TheCombinedApproach of ChemistryandMicrobiology.
4	H.W. Rossmore. 1995. Handbook of Biocide and Preservative Use.

Week	Weekly Detailed Course Contents	
1	Theoretical	Biocides concept, importance, current location
2	Theoretical	Biocides and biocidal control tests
3	Theoretical	Necessary documentation and permits for the safe sale on the market of biocidal products
4	Theoretical	The interaction of microorganisms with the biocide mechanism
5	Theoretical	The kinds and types of use of the biocidal agent
6	Theoretical	paper biocidal agent, for use in the pulp and paper, food and microbiological analysis
7	Theoretical	Biocide use in personal care products and control tests
8	Intermediate Exam	MID TERM EXAM
9	Theoretical	Enumeration of microorganisms in the textile industry and the use of biocides
10	Theoretical	Biocide use in coatings, paints the history of biocides
11	Theoretical	The effect of the biocide used in wood protection and methods
12	Theoretical	The selection of disinfectant in food hygiene and food effect, antimicrobials in food preservation: Direct antimicrobial protection, indirect antimicrobial protection
13	Theoretical	Use of biocidal and microbial count in cosmetics
14	Theoretical	Biocidal use and microbiological counts in pool water and toilet
15	Theoretical	Biocidal use and microbiological counts in pool water and toilet Control and use of biocides in plastics
16	Theoretical	PRESENTATION
17	Final Exam	FINAL EXAM

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	5	0	2	10
Assignment	5	1	2	15
Reading	2	0	1	2



Individual Work	15	0	3	45
Quiz	5	0	4	20
Midterm Examination	1	0	1	1
Final Examination	1	0	1	1
Total Workload (Hours)				94
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	1. Biocide concept and importance
2	2. Control of the use of biocides and biocidal testing
3	3. The necessary documents and permits for secure sale on the market of biocidal products
4	4. Interaction and mechanisms of microorganisms with biocidal substances
5	5. Biocidal product application methods
6	6. To be apply in industrial products such as paper, textiles, paint, cosmetics
7	7. Selection and application of biocidal agent to provide Food, pool and toilet hygiene
8	8. Biocidals and areas used in the market
9	9. New biocidal requirements and investigation
10	10. Important in the industrial production of biocidal

### 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	L6	L7	L8	L9	L10
P3				3						
P5	5	5				5				
P6			4		4					
P7							4			
P12								4	4	4

