

# INSECT TOXICOLOGY

1	Course Title:	INSECT TOXICOLOGY
2	Course Code:	BIT5006
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	2
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. NABİ ALPER KUMRAL
15	Course Lecturers:	Prof. Dr. Nabi Alper KUMRAL
16	Contact information of the Course Coordinator:	akumral@uludag.edu.tr Tel: (90) 224-294-15-76 Adres: Bursa Uludağ Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Görükle Kampüsü, Nilüfer/Bursa Nilüfer/Bursa
17	Website:	<a href="http://en.uludag.edu.tr/Bologna/dereceler/dt/33/dl/tr/b/26/p/1041/drs/335440/">http://en.uludag.edu.tr/Bologna/dereceler/dt/33/dl/tr/b/26/p/1041/drs/335440/</a>
18	Objective of the Course:	This course covers the principles of toxicology as they relate to insecticides and insect pests. This course will provide an overview on insecticide classification, formulation, mode of action, resistance, metabolism, environmental fate, and regulatory legislation. This course is also covers current research in insect toxicology including evaluate to biological effectiveness of insecticides and acaricides, resistance in insect and mite to pesticides, protection of non-target species, ecotoxicological test methods and use of insects as model organisms.
19	Contribution of the Course to Professional Development:	Can make the effectiveness tests of insecticides and acaricides in professional life. Knows the effects of all insecticides and acaricides.
20	Learning Outcomes:	
	1	Students should be able to know the description of toxicology and its scope
	2	To understand the classification of insecticide and acaricides which are used in agricultural areas
	3	To teach the mode of action of synthetic, botanical and microbial pesticides
	4	To develop practical skills in bioassay to insects and mites in laboratory
	5	To gain make the statistically analysis of bioassay in test organism versus pesticides
	6	To become familiar with the advanced details about xenobiotics metabolism in target organism
	7	To gain effective use of insecticides and acaricides against pests without cause to resistance
	8	To understand the role of pesticide rotation for prevent to resistance to them

		9	To learn the pesticides are hazard to which non-target organisms		
		10			
21	Course Content:				
	Course Content:				
Week	Theoretical		Practice		
1	Introduction to insect toxicology and its scope		Introduction to pesticide formulation types		
2	Pesticide laws and regulations		Introduction to pesticide technical material		
3	The formulation of pesticides		Preparing different pesticide doses in different solvents		
4	The classification of insecticides –I		Applying the injection bioassay test method against a pest		
5	The classification of insecticides –II		Applying the topical bioassay test method against a pest		
6	Evaluation of toxicity		Applying the residual bioassay test method against a pest		
7	The uptake of insecticides		Applying the baiting bioassay test method against a pest		
8	The mode of action of insecticides-I		Probit analysis and calculating LD50, LC50, LT50, ED50 and KD50 values		
9	The mode of action of insecticides-II		Invitro testing procedures		
10	The mode of action of acaricides and fumigants		Biochemical tests for evaluate to enzyme activities-I (oxidases)		
11	Principles of pesticide metabolism		Biochemical tests for evaluate to enzyme activities-II (hydrolysases)		
12	Species differences and other phenomena associated with the metabolism of xenobiotics		Native PAGE electrophoresis test for evaluate to enzyme activities		
Activites			Number	Duration (hour)	Total Work Load (hour)
Theoretical			14	2.00	28.00
22	Textbooks, References and/or Other		The Toxicology and Biochemistrv of Insecticides, Yu S.		
Practicals/Labs			14	2.00	28.00
Self study and preperation			Biochemical sites of insecticide action and resistance, Ishaava I. Insecticide resistance, Delhom L. Pickett J.A..		
Homeworks			0	0.00	0.00
Projects			0	0.00	0.00
23	Assessment				
Field Studies			0	0.00	0.00
TERM LEARNING ACTIVITIES					
Midterm exams		R	0	0.00	0.00
Others			0	0.00	0.00
Final Exams		0	0.00	48.00	48.00
Total Work Load					176.00
Total Exam load/ 30 hr		1	100.00		5.87
ECTS Credit of the Course					6.00
Contribution of Term (Year) Learning Activities to Success Grade			0.00		
Contribution of Final Exam to Success Grade			100.00		
Total			100.00		
Measurement and Evaluation Techniques Used in the Course			The final exam will be weighted 100% of the final course grade. A hour final exam will be given during the Final Examination Period at the end of the semester. The final exam will be comprehensive across all materials in this subject.		
24	ECTS / WORK LOAD TABLE				

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0
ÖK6	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	3	0	5	5	0	5	0	0	0	0	0	0	0	0	0	0
ÖK8	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0
ÖK9	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives    PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			