INSECT SEX PHEROMONES

1	Course Title:	INSECT SEX PHEROMONES	
2	Course Code:	BIT6011	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	5.00	
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. ORKUN BARIŞ KOVANCI	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	baris@uludag.edu.tr Tel: (90) 224-294-15-77 Adres: Uludağ Üniv., Ziraat Fak. Bitki Koruma Bölümü Görükle kampüsü, Bursa 16059 Türkiye	
17	Website:	http://www20.uludag.edu.tr/~bitkik/ludi/bsf_ing.docx	
18	Objective of the Course:	The objective of this course is to provide detailed introduction to the principles of chemical ecology, semio-chemicals and the behaviours in insects that are controlled by insect sex pheromones. The male and female chemosensory structures in insects and how olfaction affects their behaviour will be examined. In this course the use of sex pheromones alone or in combination with plant compounds within crop protection will also be covered.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Students will be able to; learn the basics of chemical ecology and semiochemicals,
		2	To describe the general morphology of the chemosensory system in insects and make comparisons with the system in vertebrates,
		3	To explain how chemical (sex pheromone) signals are processed from detection to behaviour,
		4	To describe biosynthesis pathways for sex pheromones,
		5	To learn the process of isolation and chemical identification of sex pheromones,
		6	To evaluate the use of sex pheromones and plant compounds within crop protection,
		7	To plan and design an experiment and implement methods for the use of sex pheromones in monitoring, mass trapping and mating disruption,
		8	To discuss relevant scientific articles within chemical ecology.
		9	

	10	
21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Semio-chemicals	The chemical structures of behavior modfying chemicals in insects
2	Insect communication	-
3	Insect sex pheromones	-
4	Sex pheromone producing and sensing structures in male and female insects	The morphological inspection of insect antennae and abdomen
5	The process of isolation and chemical identification of sex pheromones,	Gas chromatography
6	How chemical (sex pheromone) signals are processed from detection to behaviour	-
7	Biosynthesis pathways for sex pheromones	-
8	Behavioral responses to insect sex pheromones	-
9	The measurement of chemical responses to sex pheromones by olfactometer and electroantennogram	Introduction of olfactometer in the lab
10	The use of insect sex pheromones for monitoring	The application of pheromone traps in the lab and field
11	Mass trapping	-
12	Mating disruption	The application of pheromone dispensers in the lab and
13	Student homework presentations	Oral presentation
22	Textbooks, References and/or Other Materials:	Howse, P.E., Stevens, I.D.R. and O.T. Jones (1998). Insect Pheromones and their use in Pest Management. Hansson. B.S. (1999). Insect Olfaction. Springer-Verlag, New York.
23	Assesment	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	6	5.00	30.00
Homeworks	1	19.00	19.00
Projects	0	0.00	0.00
Field Studies	5	3.00	15.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	30.00	30.00
Total Work Load			150.00
Total work load/ 30 hr			5.00
ECTS Credit of the Course			5.00

Midterm Exam	0	0.00
Home work-project	1	20.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		20.00
Contribution of Final Exam to Success Grade		80.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
ÖK8	0	0	5	0	0	0	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**					