INSECT MORPHOLOGY

1	Course Title:	INSECT MORPHOLOGY	
2	Course Code:	BTK3607	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	3	
6	Semester:	5	
7	ECTS Credits Allocated:	3.00	
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	
17	Website:	http://en.uludag.edu.tr/Bologna/dereceler/dt/33/dl/tr/b/26/p/1041/drs/335440/	
18	Objective of the Course:	This course is designed to teach students about arthropod and especially insect morphology. This course provides a detailed introduction to the external and internal anatomy of insects. Lecture introduces basic concepts in insect morphology, such as the organization of the insect body plan and organ systems as well as physiological functions. The laboratory portion of the course introduces students to the basic methods of insect microdissection and drawing insect illustrations.	
19	Contribution of the Course to Professional Development:	Can define the insect species encountered in the field and professional life according to their external morphology.	
20	Learning Outcomes:		
		1	Students should be able to know differences among all arthropod sub-phyllum and class
		2	To develop practical skills in insect, mite and other arthropods identification and related entomological techniques,
		3	To understand the fundamentals of insect morphology and physiology principles,
		4	To comprehend the importance of morphological structures in terms of separate of insect order, family, genus and species,
		5	To become familiar with the basic details about the insect systems such as digestion, respiration, reproductive, nervous, circulation and excretory systems,
		6	To help describe how important insect pests species,
		7	To use laboratory study techniques for insects.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction to arthropod systematic and differences between manbulata and chelicerata sub-phylla	Show Chelicerata and mandibulata differences on samples
2	Insect eggs, insect embryology and postembryology	Show insect egg structure and types
3	Head, mouthparts and feeding parts of insects	Show head structures including appendages, areas, sutures, feeding parts of head
4	Integument, epidermis, basic structure of cuticle, molting, cuticle formation, Expansion of the new cuticle, changes in the intermoult cuticle	Show integument structure of insects
5	Thorax structure and segmentation	Show area, sutures, appendages contain legs and wings, of thorax Show variation between segmentations of thorax
6	Thorax's appendages including legs and wings.	Show wing veins and region Show legs and pretarsus types
7	Abdomen segmentation, abdominal appendages and outgrowths	Show abdominal structures including appendages, areas, sutures and types
8	General evaluation	Show general insect structure
9	Muscles structure, changes during development, muscle contraction, energetic	Show muscles structure and types
10	Spiracles	Show variations of these systems between insect species.
13	Nervous system, basic components, basic	Show central nervorus system including brain, ganglions
	brain and sensory organs	
14	Reproductive system of male; anatomy of the	Show male and female reproductive organs
	transfers of sperm. Reproductive system of female; Anatomy of	
	ovulation, fertilization of the egg, oviposition	

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	0	0.00	0.00
Homeworks	0	0.00	0.00
Projects	1	7.00	7.00
Field Studies	0	0.00	0.00
Midterm exams	1	14.00	14.00
Others	0	0.00	0.00
Final Exams	1	14.00	14.00
Total Work Load			91.00
Total work load/ 30 hr			3.03
ECTS Credit of the Course			3.00

22	Textbooks, References and/or Other Materials:	Principles of Insect Morphology (Edited by R.E. SNODGRASS) The Insects, Structure and Function (Edited by R.F. CHAPMAN) Böcek Morfoloji ve Fizyolojisi(Edited by Ş. GÜÇLÜ) A textbook of Entomology (Edited by H.H. ROSS, C.A. ROSS, J.R.P. ROSS)
23	Assesment	

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	20.00
Quiz	0	0.00

Home work-project	1	20.00
Final Exam	1	60.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		A mid-exam will be weighted 20%. Preparing and presenting a homework about the course content will be weighted 20%. The final exam will be weighted 60% 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; however, materials since the midterms will be weighted more heavily.

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	3	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK2	3	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK3	3	5	0	0	5	3	0	0	0	0	0	0	0	0	0	0
ÖK4	3	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK5	3	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK6	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ÖK7	3	5	0	0	5	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