Description of the insect physiology course

1. : Course Name
Insect physiology
2. : Course Code
INSP317
3. Semester / Year : Annual
Fall semester/2023-2024
4. Date this description was prepared
2024 / 2 / 1
5. Available forms of attendance:
My presence
6. :(Number of study hours (total)/number of units (total
75 hours / 3.5 units
7. (Name of the course administrator (if more than one name is mentioned
Assistant Professor Doctor. Mohammed Yousuf Sayed Ghani mohammed_yousuf76@uomosul.edu.iq Assistant Lecturer. Ahmed Thamer Hammadi ahmed.thamer@uomosul.edu.iq
8. Course objectives
• physiology and the information that must be available to know be able to define the concept of insect **should** .the typcs of insects • . physiology Choosing the suitability of factors affecting insect • iate onesDifferentiating between different planning systems and the appropr • .Understand the basics of planning and use them in establishing an insect laboratory • Distinguishing between types of insects according to the information acquired during the study of insect .physiology and anatomy and identifying their functions • Familiarity with the information the trainee needs and what is available to him to master his work in insect .dissection • .The student's awareness of the factors affecting insect physiology and how to deal with them • Determine the appropriate type of insect dissection tools and what should be taken into account when dissectin the laboratory and identifying their types them in • that must be A comprehensive study of various types of insects and determining the controls and conditions . physiology laboratory met in the insect
9. Teaching and learning strategies
- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training - Practical exercises - Field project - education -Self
10. Course structure

the	hours	learning outcomes Required	Name of the unit.	Learning method	Evaluatio

week			or topic		n method
1	theoretical 1	a1 Identify the stages of insect embryonic : development b1 He possesses the practical and mental : identify knowledge and concepts that help him internal systems the insect's	-Embryonic growth the shape and -structure of the egg fertilization and maturation of the early -eggs embryonic growth the process -centers of castrola formation the formation of the - the -nervous system formation of the he t -bronchi formation of the middle germinal layer .and body cavities The effect of pesticides on some .internal systems	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	a2: The student gets acquainted with the division of insects and its legal location from the animal kingdom, and the features of the insect class	The location of insects in the animal kingdom, the characteristics of the insect class, the layers of the body wall, the the insect's regions of body and the appendages connected to it	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	Short practical test 1
2	theoretical 1	a2: Determines the insect's internal organs : insect's digestive system and the parts of the b1: He possesses practical and mental : identify knowledge and concepts that help him the parts of the digestive system of insects	The digestive system the alimentary canal - -the salivary glands - food sources for the -insects physiology of digestion and -absorption the -microbiology effect of nutritional .deficiency in insects	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam
	practical 3	a2: The student explains the components of the digestive system for insects b3: The student draws the digestive system of insects	Components of the digestive system , Careers all part , mechanism digestion in Insects	Interactive lecture, brainstorming, dialogue and discussion, field raining, practical t -exercises, and self learning	My laboratory work
3	theoretical 1	a1 :the excretory system of insects Identify : b1: He possesses the practical and mental : knowledge and concepts that help him identify mechanical excretory organs the	-Excretion in insects excretion of -nitrogenous wastes -excretory organs mechanism of regulation of salt and -excretion water balance in .insects	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam

	practical 3	b4: The student tries laboratory anatomy tools b6: The student mastered the process of showing the digestive system from the insect body under a microscope.	Dissecting an insect under a microscope and students viewing the parts of the digestive system	Interactive lecture, brainstorming, dialogue and discussion, field learning -training, self	My laboratory work
4	theoretical 1	a1: Identify the circulatory system of insects : b1: He possesses the practical and mental : concepts that help him identify knowledge and the types of blood cells in insects and the .function of each of them	-Circulatory system diaphragms and blood auxiliary -cavities blood -hearts functions -circulation of the circulatory types -blood -system -cells of blood functions of blood tissues related -cells to the circulatory .system	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	practical 3	a2: The student determines the structures of the circulatory system in insects (heart and aorta) under a microscope.	Structure of the circulatory system in insects (heart, aorta), mechanics of blood circulation, types of blood cells, blood functions	Interactive lecture, brainstorming, dialogue sion, field and discus training, practical -exercises, and self learning	My laboratory work
5	theoretical 1	a1: Identify the nervous system of insects : b1: He possesses practical and mental : knowledge and concepts that help him identify the types of nervous systems in insects and the nerve impulses methods of transmitting .between nerve axons	-The nervous system the -the nerve cell central nervous the - system splanchnic or sympathetic nervous the caudate -system -nervous system transmission of .nervous stimulation	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 1 , final exam report ,
	practical 3	a2: The student gets to know the circulatory .system in the body of the insect b2: The student explains the blood circulation mechanism in the body of the insect	Dissecting an insect under a microscope and students viewing the parts of the circulatory system	active lecture, Inter brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Laboratory evaluation
6	theoretical 1	a1: Identify the types of nervous systems in : insects b1: He possesses practical and mental : identify knowledge and concepts that help him the sensory organs in the insect's body and the .function of each one	The superficial sensory nervous optical sense -system methods of -organs - image formation chemical sense mechanical -organs -sense organs temperature and humidity sense auditory -organs sound -sense organs generation organs in .insects	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Short test, final test

	practical 3	b1: The student sees the locations of the structures of the respiratory system in insects (respiratory stomata, bronchioles, and gills) under the microscope a2: The student explains the mechanics of respirating in insects	Respiratory system in insects Mechanics of breathing, structure and function respiratory stoma,) bronchi, bronchioles, body wall, gills, types of respiratory ,systems	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self ninglear	Direct drawing and homework
7	theoretical 1	a1: Identify the excretory organs in insects : b1: He possesses the practical and mental : identify knowledge and concepts that help him .the excretory mechanism in insects	Excretory organs in the insects and excretory mechanism, structure and function Malpighian tubules,) (fat bodies, renal cells	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	a2: The student shows the installation of the respiratory system and his mechanism b1: The student enumerates the types of respiratory devices in insects.	Dissecting the insect under the microscope and students watching the parts of the respiratory system	Interactive lecture, gue brainstorming, dialo and discussion, field training, practical exercises, field project, learning-self	Direct drawing And my homework
8	theoretical 1	a1: .Identify the stages of feeding in insects : b1: He possesses practical and mental : him knowledge and concepts that help .recognize the basic rules of nutrition in insects	the basic -Nutrition the -rules of nutrition i	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	b4: The student tries laboratory anatomy tools b6: The student mastered the process of showing the excerotory organs from the body of the insect under a microscope.	Dissecting the insect under the microscope and the students watch the main and secondary excretory organs	re, Interactive lectu brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	My laboratory work
9	theoretical 1	c1: Uses the information the designer needs : and what is available to him to perfect his work + first exam	nutritional mportant .needs of insects+ first exam	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Semester exam 2 , final exam
	practical 3	b4: The student tries laboratory anatomy tools b6: The student mastered the process of showing the muscular system in the body of the insect under a microscope.	First monthly exam+ Components and functions of the muscular system in insects	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self ninglear	Semester test 1
10	theoretical 1	a1 :Identify the components of the : reproductive system in insects b1: He possesses practical and mental : knowledge and concepts that help him learn about the physiology of the insect reproductive .mechanism of laying eggs system and the	The female -reproductive system the -the ovarian tubes process of egg the -formation process of egg laying the male - -reproductive system the process of sperm .formation	Interactive lecture, brainstorming, dialogue -ssion, selfand discu learning	Semester test 2
	practical 3	b4: The student distinguishes the structures of the female reproductive system in the insect body (ovarian tubes - the process of forming eggs - the process of laying eggs) under the	Components and functions of the female reproductive system	Interactive lecture, brainstorming, dialogue and discussion, field training, practical	Field visit to the fields

		microscope.		-exercises, and self learning	
11	theoretical 1	a1: Identify the components of the bronchial : system in insects b1: He possesses practical and mental : knowledge and concepts that help him identify the breathing mechanism in different types of insects	The bronchial system the -its structure - structure of the -respiratory stomata of the mechanism controlling the opening of the -respiratory stomata respiration in -terrestrial insects respiration in aquatic respiration in -insects endoparasitized hemoglobin -insects as a respiratory .pigment in insects	Interactive lecture, gue brainstorming, dialo -and discussion, self learning	Final test
	practical 3	b4: The student distinguishes the structures of the male reproductive system in the body of the insect	the components and functions of the male reproductive system.	,Interactive lecture brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
2	theoretical 1	a1: Learn about the structure of the muscular : .system in insects b1 : He possesses practical and mental : knowledge and concepts that help him learn about muscular preparation and control of .walking and flying	The muscular system -muscle structure - bronchi in the muscle -muscles nervous -support preparation of the types of -muscles control of -muscles .walking and flight	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	practical 3	b4: The student tries laboratory anatomy tools b6: The student masters the process of showing the nervous system in the insect's body under the microscope.	Components of the nervous system in insects, sections of nerve cells, sections of the nervous system and the function of each section	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -d selfexercises, an learning	Direct drawing and homework
3	theoretical 1	a1: Identify the types of glands and hormones : in insects b1: He possesses practical and mental : knowledge and concepts that help him identify the functions of glands in insects	- Development -endocrine glands types of hormones and their functions .Silence in insects -	Interactive lecture, brainstorming, dialogue -and discussion, self learning	Final test
	practical 3	a2: The student understands the stages of the nutrition process in insects	Nutrition in insects, the stages of the feeding process	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	Direct drawing and homework
4	theoretical 1	a1 :insect's Identify the components of the : .body wall b1 :He possesses the practical and mental : knowledge and concepts that help him in identifying the chemical composition of the	its -Body wall structure of -benefits - the body wall	,Interactive lecture brainstorming, dialogue -and discussion, self learning	Short test, final test

		.insect's body wall			
	practical 3	a2: The student explains the installation of the muscular system, the mechanism of his work and the types of muscle tissue in insects.	Dissecting the insect under the microscope and students watching the parts of the muscular system.	Interactive lecture, brainstorming, dialogue and discussion, field training, practical -exercises, and self learning	My laboratory work Short practical test 3
15	theoretical 1	c1: Uses the information the designer needs : and what is available to him to perfect his work + second exam	chemical composition of the insect body the moulting -wall .process + second exam	Interactive lecture, brainstorming, dialogue -self ,and discussion learning	Short test, final test
	practical 3	b4: The student tries laboratory anatomy tools b6: The student shows the occurrence of the reversal responses in the neurons in insects.	Dissecting an insect under a microscope and students viewing the parts of the nervous system + the second monthly exam	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, learning-self	Semester test2 Final test

11. Course evaluation

T	Calendar methods	(date (week Calendar	Class	Relative % weight
1	Short test(1)Quiz	the sixth week	2	2
2	Short test(2)Quiz	The fourteenth week	2	2
3	Semester test (1)	The seventh week	10	10
4	Semester test (2)	The eleventh week	10	10
5	Final theoretical test	Final semester exams	40	40
6	Report and discuss	The fifteenth week	5	5
7	Report and discuss	The third and fifth week	5	5
8	Short practical test (1)Quiz	The first week	2	2
9	Short practical test (2)Quiz	fourth week	2	2
10	Short practical test (3)Quiz	The fourteenth week	2	2
11	Final practical test	Final semester exams	20	20
	the total	100	100%	100%

12. Learning and teaching resources

(Required textbooks (methodology, if any	written by Dr. Thabet Abdel / Book of insect physiology and organ functio Darkzali-Moneim Al
(Main references (sources	- Book of insect physiology and organ functions / written by Dr. Darkzali-Thabet Abdel Moneim Al
Recommended supporting books and references (scientific journals, (....reports	Insect Physiology and Biochemistry /By James L. Nation ,Sr.
Electronic references, Internet sites	https://www.routledge.com/Insect-Physiology-and-Biochemistry/NationSr/p/book/9781032247045

Theoretical subject teacher
Assistant Professor Dr. Mohammed Yousuf Sayed Ghani

Practical subject teacher
Assistant Lecturer. Ahmed Thamer

Chairman of the Scientific Committee
Professor Dr. Juhaina Idris Mohamed

Head the Plant Protection Department
Assistant Professor Dr Firas Kazem Daoud Al-Jubouri

جامعة الموصل
كلية الزراعة والغابات
قسم وقاية