Course Description Form

1. Course Name:

Nematology

2. Course Code:

NEMA321

3. Semester / Year:

Second semester/third stage/2023-2024

4. Description Preparation Date:

1-2-2024

5. Available Attendance Forms:

classroom

6. Number of Credit Hours (Total) / Number of Units (Total)

2 hours theory / 3 hours practical (5 hours) / 3 units

7. Course administrator's name (mention all, if more than one name)

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2- Rayan Salem Mahmoud
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8. Course Objectives

Course Objectives	• Introducing students to the common types of Nematode and their effect on crops, and explaining their transmission methods and infection mechanisms. • Provide an understanding of the basic biology and ecology of Nematode, with an emphasis on the impact of environmental factors on their spread and development. • Students learned the skills of diagnosing caecilian infections and analyzing the factors affecting them, using laboratory tests and field observation. • Study means and methods of prevention and control of Nematode, including the use of pesticides and advanced agricultural techniques such as biological control. • Analyze the economic and environmental impacts of Nematode, and study sustainable and preventive management methods to reduce their impact on crops and the environment. • Enhancing students' skills in planning and implementing field experiments and scientific studies to effectively treat and control caecilian infestations. • Encouraging students to research and interact with modern literature and research in the field of Nematode, and to contribute to developing innovative solutions to meet current challenges in this field.

9. Teaching and Learning Strategies

Strategy

- Brainstorming
- Teamwork
- Discussion
- Discovery learning
- Problem solving or problem-based learning
- E-Learning
- Practical field training
- Think, discuss, share

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	a1 Definition of Nematode (nematodes)	Definition of the science of Nematode (nematodes), the stages that this science went through, the economic importance of Nematode as important pests on most agricultural crops.	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
	3 Practical	B1 Isolation from samples infected with Nematode	Isolation from roots	Interactive lecture, brainstorming, dialogue and discussion, field training, self-learning	Short practical test
2	2 Theoretical	A1: Definition of the characteristics of Nematode (nematodes)	general characteristics -The nature of its presence and spread The spread and distribution of plant nematodes	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
	3 Practical	B2 Disease symptoms caused by snake worms	Examining samples of plant roots and identifying the most important disease symptoms	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
3	2 Theoretical	b2 Morphological characters	Study of morphological characters the size Format	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test
	3 Practical	B2: Body wall of the digestive tract (oral cavity - esophagus - intestine...)	Microscopic examination to identify the body wall of the digestive tract	Interactive lecture, brainstorming, dialogue and discussion, field training	self-learning Short practical test

4	1 Theoretical	B2: Study of the external shape of the body wall	Digestive diaphragm Oral cavity - esophagus - intestine	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester test 1, final test, report.
	3 Practical	B2: Examination of the excretory system - The reproductive system	Microscopic examination to identify the excretory system - The reproductive system	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
5	1 Theoretical	B2: Study of the internal systems	the excretory system Reproductive system For the nervous system and sense organs	, interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 1, final test, report.
	3 Practical	B2 The nervous system and sense organs	Microscopic examination to identify the nervous system and sense organs	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Semester test 1, final test, report.
6	1 Theoretical	B2: Identifying the classification of plant nematodes.	Classification of plant nematodes Study and description of common and important types of Iraqi poetry	interactive lecture, brainstorming, dialogue and discussion, self-learning	short test, final test
	3 Practical	B2 Environmental factors and their relationship to nematode activity and reproduction	numerical density of nematodes, from different fields and with different humidity levels	interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
7	1 Theoretical	B2: Study of environmental factors	Environmental factors and their relationship to the activity and reproduction of nematodes, soil and its various characteristics	interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test
	3 Practical	B2: Diseases caused by nematodes	Examines the symptoms of diseases caused by widespread nematodes and the task	interactive lecture, brainstorming, dialogue and discussion	semester test 2, final test

8	1 Theoretical	B2: Plant hosts, disease symptoms	Plant hosts, disease symptoms caused by nematode infection Plant hosts, disease symptoms causing damage resulting from it Plant families, disease symptoms, diagnostic methods	interactive lecture, brainstorming, dialogue and discussion	self-learning, semester test 2, final test
	3 Practical	B2: Morphological characters	microscopic examination of morphological characters	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises	self-learning Short practical test
9	1 Theoretical	B2: Identifying diseases caused by nematodes.	Studying diseases caused by widespread and important nematodes in terms of their spread factors. Studying the diseases caused by widespread and important nematodes in terms of their symptoms Study of diseases caused by widespread and important nematodes in terms of control methods.	Interactive lecture, brainstorming, dialogue and discussion, self-learning	semester test 2, final test.
	3 Practical	B2: Isolation and diagnosis of Nematode	Isolation and diagnosis of Nematode from different fields	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test
10	1 Theoretical	B2: Identifying the life of the nematode that causes the disease	nature of the damage caused by the nematode that causes the disease Its reproduction Its life cycle	interactive lecture, brainstorming, dialogue and discussion, self-learning	quarterly test 2
	3 Practical	B2 Methods of combating eelworms	Agricultural, chemical and biological methods	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Short practical test

11	1 Theoretical	B2: Identifying methods of prevention, reducing infection, and resistance to parasites, especially those diseases caused by some common species.	Methods of prevention of those diseases caused by some common species. Agricultural and chemical methods Biological methods	interactive lecture, brainstorming, dialogue and discussion, self-learning	final exam
	3 Practical	B2 The nature of nematode damage that causes the disease.	Examination of samples of leaves, seeds and roots of plants.	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning.	
12	1 Theoretical	B2: Identifying some plant viruses transmitted by nematodes	Diseases in which some plant viruses are transmitted by Nematode the relationship between them, Methods of controlling snakeworms (nematode pests)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning.	final exam
	3 Practical	B2: Methods of prevention Methods	Methods of prevention Methods of prevention and reduction of infection and resistance to parasites, especially those diseases caused by some common species.	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	short practical test.
13	1 Theoretical	D2: Training on the skills of managing and presenting topics related to Nematode	Training on the skills of managing and presenting topics related to Nematode	Dialogue and discussion, self-learning	Report
	3 Practical	C2: Identifying the most important symptoms and the life cycle	Identifying the most important symptoms and the life cycle Methods of control for the most important species that infect vegetable crops and trees	Dialogue and discussion, field training, practical exercises, self-learning	report
14	1Theoretical	D2: Solving a problem	field visit to one of the fruit orchards.	Interactive lecture, brainstorming, dialogue and discussion, self-learning	report.

	3 Practical	C2 Identifying the most important symptoms and the life cycle	Identifying the most important symptoms and the life cycle Control methods for the most important species that infect field crops	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, self-learning	Short practical test 3
15	1 Theoretical	D2 Problem solving	Field visit to the fields	Brainstorming, dialogue and discussion, self-learning	report
	3 Practical	E1 Problem solving	Practical applications of control methods	Brainstorming, dialogue and discussion, field training, practical exercises	report

11. Course Evaluation

N	Calendar methods	Calendar date (week)	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 (curricular books, if any)	Plant nematodes - Al-Hazmi
Main references (sources)	Plant nematodes in Arab countries - Walid Ibrahim Abu Gharbia 2012
Recommended books and references (scientific journals, reports...)	Nematode diseases of plants and elementary animals - Fayyad Muhammad Sharif Plant Parasitic Nematodes- Bert Zuckerman
Electronic References, Websites	https://www.apsnet.org/Pages/default.aspx https://www.iasj.net/iasj?uiLanguage=ar https://thesesuniversity.blogspot.com/ https://iqdr.iq/index https://www.google.com/?hl=ar

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