



**Ministry of Higher Education and Scientific
Research/Iraqi Kurdistan Region
University of Salahaddin /College of Agriculture
& Engineering/ Department of Plant Protection.**

Course book / High diploma

Department: Plant Protection

Subject: Biological control

Semester: Spring / 2 hours/week

Lecturer: Dr. Shatha Hussien Ahmed

Dr. Majid Hassan Mustafa

Academic Year: 2023 - 2024

Course Schedule

1. Course name	Theoretical Insect Physiology
2. Lecturer in charge	1- Dr. Shatha H. Ahmed 2- Dr. Majid Hassan Mustafa
3. Department/ College	Plant protection\ Agricultural Engineering sciences
4. Contact	Email: shatha.ahmed@su.edu.krd Mobile: +9647504301734 Email: majid.mustafa@su.edu.krd Mobile: +964750 443 96 93
5. Time (in hours) per week	For example, Theory: 2 hours / week
6. Office hours	Daily from 8:30 to 2:30
7. Course code	
8. Keywords	Plant Protection, biological control, high diploma, slybus.
9. Course overview:	<p>Biological control is the use of natural enemies including predators, parasitoids, weed feeders and entomopathogens for the reduction of pest densities. This course will focus on the concepts of biological control of insects, mites and weeds in natural and managed ecosystems. The student will learn about the history of biological control including critical pest management programs that provided the foundation of the discipline. The biology and diversity of natural enemies will be presented. The course will cover the implementation of biological control including the importation of natural enemies or <i>classical biological control</i>, the deliberate increase of natural enemies or <i>augmentation biological control</i>, and the preservation and enhancement of resources to favor natural enemies or <i>conservation biological control</i>. In addition, the students will learn about techniques to monitor and evaluate natural enemies, federal regulations and the importance of educating the stakeholders about biological control. Having a solid understanding of biological control will help students in the development of effective pest management programs.</p> <p>This postgraduate diploma course on Biological Control of Plant Diseases provides an in-depth exploration of using natural enemies to manage plant pathogens sustainably. Students will learn about the principles, mechanisms, and practical applications of biocontrol through structured lectures on key topics, including screening for biocontrol agents, application methods, and successful case studies.</p>
10. Course objective:	<p>The overall course objective is to familiarize students with the principles and practices of using natural enemies and antagonists to manage the abundance of, and damage caused by, pests (invertebrates, plant pathogens, and weeds). Primary focus will be placed on the biological control of pests of plant systems (agricultural, landscape, wildlands).</p>

11. Specific Learning Objectives

By the end of the course, students will be able to:

1. Identify some of the more common natural enemies that can be used for controlling invertebrate pests, plant pathogens and weeds; and identify the relative advantages and disadvantages of using various types of natural enemies.
2. Express the ecological, physiological and biochemical processes involved in biological control
3. Explain the various strategies by which natural enemies are employed to control pests and how the different strategies fit into an integrated pest management framework
4. Outline the risks and benefits of using various forms of biological control
5. Identify the economic and regulatory factors that affect biological control development and commercialization.
6. Develop an outline of a biological control program for specific production systems

12. Forms of teaching

Usage of different forms of teaching:

Data show, power point, Explaining & asking, White board, Report, back feed, Videos, Highlighting Important Notes and finally Seminars.

13. Assessment scheme

1- The course degree was divided as follow 20 Marks of Midterm Exam, 10 Marks of seminar, 10 Marks of Scientific Report, 5 Marks of Activity and finally 5 Marks of Quiz. The fort Score will be 50%.

Test	Mark 50%
Midterm Exam	20
Seminar	10
Scientific Report	10
Weekly Quiz	5
Activity	5
Total	50

14. Student learning outcome:

Course outcomes should clearly relate to topics, assignments, and exams that are covered in the present course. Course outcomes should be clear, measurable, use verbs (e.g., identify, explain), also student should know the important of Biological control, adaptations of insect and, how insect survive and tolerant with their ecosystems, and how insect is attracting and attach and the types of biological control.

15. Course Reading List

16. The Topics:

Lecturer's name

1st week: Introduction to biological control of insects

2nd week: History, Terming of insect biological control

3rd week: Biological control: A tool for pest management,
Characteristics of effective biocontrol agents.

4th week: Traditional Methods of pest control, Cultural control

5th week: Conservation biological control of insect pests

6th week: the 1st Exam.

7th week: Introduction to the Biological Control of Plant Diseases

8th week: Screening for Direct Biocontrol Activity In Vitro

9th week: Application Methods of Bio-Control Agents

10th week: Future Trends and Innovations in Biological Control

11th week: the 2nd Exam.

**Asst. Prof. Dr.
Shatha H. Ahmed**

Dr. Majid H. mustafa

17. Examinations:

1- Questions samples.

- **Compositional:**
 - a-Definition?
 - b-Explanation?
 - c- What are the differences between.....?
 - d- Fill-in the blanks?
 - c- Write the functions of
- True or false type of exams?
- Draw the diagram, Scheme, Structure of.....?

18. Extra notes:

2- With the best wishes to the development of Lab. In the. Department.

19. Peer review پیدلچووننهوهی هاوطل

