Jordan University of Science and Technology

Faculty of Agriculture

Plant Production Department

PP747 Biological Control Of Plant Pests

Second Semester 2019-2020

Course Catalog
3 Credit Hours. The ecological principles and applied practices of modern biological control of insects, weeds and plant pathogens; including the history, scope, strengths and weaknesses, scientific basis of biological control, the biology of entomophagous insects, insect pathogens, microbial control, biological control methods, population ecology as it relates to biological control, biological control in integrated pest management, techniques and protocols in implementation of control programs and related topics.

Text Book	
Title	Natural Enemies
Author(s)	Hajek A. E
Edition	1st Edition
Short Name	Ref # 1
Other Information	Cambridge University Press

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Biological Control	Van Driesche R. G. and Bellows T. S Jr.	1st Edition	Chapman and Hall, New York, New York.
Ref # 3	Insect Pathology	Tananada Y. and Kaya, H. K.	1st Edition	Academic Press, Inc. San Diego, Ca.
Ref # 4	Microbial control of weeds.	TeBeest, D. O.	1st Edition	Chapman & Hall, N.Y., N.Y.

Instructor	
Name	**Prof. Hail Shannag**
Office Location	C4L2

Office Hours	Sun : 08:30 - 09:30 Sun : 12:30 - 13:30 Mon : 10:00 - 12:00 Tue : 08:30 - 09:30 Tue : 12:30 - 13:30 Thu : 10:30 - 11:30
Email	hail@just.edu.jo

Class Schedule & Room
Section 2: Lecture Time: Sun, Tue : 09:30 - 11:00 Room: LAB

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Introduction - Agricultural pests - Historical perspective on chemical pest control - Why consider biological alternatives?	From **Ref # 1**, From **Ref # 2**
Weeks 3, 4	Nature and scope of biological control - Definition of biological control - Ecological basis for biological control	From **Ref # 1**, From **Ref # 2**
Weeks 5, 6, 7	Natural enemies - Predators - Parasitoids	From **Ref # 1**
Weeks 8, 9	Approaches of biological control - Classical biological control (importation and colonization) - Augmentation - Conservation and enhancement	From **Ref # 1**
Weeks 10, 11	Microbial control of insects - Entomopathogenic bacterial - Baculoviruses - Entomopathogenic fungi - Entomopathogenic nematodes	From **Ref # 3**
Week 12	Biological control of weeds - Strategies for biological control of weeds - Future of biological control of weeds - Biology and ecology of agents used for biological control of weeds - Plant pathogens for controlling weeds - Insect agents used in weed control - Case history of recent successes in biological control of weeds	From **Ref # 4**
Week 13	Biological control of plant pathogen - Antagonists - Antibiosis - Biological control of seed-borne diseases - Biological control of soil boring diseases - Biological control of foliar diseases	From **Ref # 2**
Weeks 14, 15	Phases in the development of a biological control project - Planning of a project - Pre-introductory evaluation of natural enemies - Procedures for selection of natural enemies - Development of practical biological control program	

Mapping of Course Outcomes to Program Student Outcomes	**Course Outcome Weight (Out of 100%)**	**Assessment method**

Explain the history, theory, practice and science of biological control [1PLO1]	10%	
Evaluate scientific studies and concepts related to biological control [1PLO1]	15%	
Asses the current and future roles of biological control within context of agricultural and natural ecosystem. [1PLO1]	15%	
Apply ecological principles of biological control and methods used in biological control of plant pests by parasitoids, predators, pathogens and entomopathogenic nematodes to manage pest problems. [1PLO1]	20%	
Design and implement projects involving biological control agents and methods. [1PLO1]	10%	
Communicate their work effectively using the formats commonly employed in scientific oral presentations and writings. [1PLO1]	10%	
Show sources of information about biological control and those who practice it. [1PLO1]	10%	
Teach the relevant aspects of the laws that govern the practice of biological control	10%	

Relationship to Program Student Outcomes (Out of 100%)						
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
90						

Evaluation	
Assessment Tool	**Weight**
Final Exam	20%
Second Exam	20%
Assignments and Projects (writing an abbreviated grant proposal that focuses on some current aspect of biological control related to your research interest or projects)	10%
Final Exam	50%

Policy	
Exams	All exams are closed book and notes. The final exam is comprehensive covering all teaching materials. Incomplete exams need approval from the department chair and the faculty dean.
Cheating	Prohibited; and in case of cheating the student will be subject to punishment in according with the university regulations.
Attendance	Students are expected to attend all class meetings regularly. If the student is absent for more than 20% of the course, the student will be prevented from taking all subsequent exams and assigned an F (Failure) grade in the course (deprived by absence). The maximum includes both excused and unexcused absences.
Participation	Participation is highly encouraged.
Withdraw	The student can withdraw from the course in accordance with the timeline defined by the university regulations.

Grant proposal	An abbreviated grant proposal will be required. This should focus on some current aspect of biological control related to your research interest or projects.

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