

Course Syllabus

1	Course title	Ecology and Management of Plant Diseases	
2	Course number	0606921	
3	Credit hours	3	3
	Contact hours (theory, practical)	3	
4	Prerequisites/corequisites		
5	Program title	Plant Protection	
6	Program code		
7	Awarding institution		
8	School	School of Agriculture	
9	Department	Department of Plant protection	
10	Course level	PhD	
11	Year of study and semester (s)	2022 S2	
12	Other department (s) involved in teaching the course	/	
13	Main teaching language	English	
14	Delivery method	<input type="checkbox"/> Face to face learning <input checked="" type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	Issuing/Revision Date	Feb. 27 th 2022	

17 Course Coordinator:

Name: Dr. Luma Al Banna	Contact hours: 5-7 pm Monday and Wednesday
Office number: 176	Phone number: 22530
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18 Other instructors:

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19 Course Description:

This course provides ecological relationships of soil-borne and foliar pathogens. Fundamentals and techniques of plant diseases management. Disease dynamics related to management, exclusion and eradication of pathogens; principles of plant protection.

20. Course aims and outcomes:

A- Aims:

- Understand ecological relationships of soilborne and foliar pathogens
- Understand Fundamentals and techniques of plant disease management

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

PLOs	1	2	3	4	5	6	7	8	9
SLOs of the course									
A1. Know what is the science of Epidemiology and the science of Ecology	√								
A2. Know what the pattern of diseases is	√								
A3. Recognize how environmental factors affect plant diseases	√								
A4. Understand the management strategies and control measures that are used to manage plant diseases.	√								
B1. Critically evaluation of research articles		√	√			√			
B2. Evaluate different control measures						√			
B3. Synthesize and integrate methods to manage plant diseases						√	√		
C1. Derive principles of plant disease management from knowledge of plant disease ecology and epidemiology						√			
D1. Ability to plan management of plant diseases							√		√
D2. Supervise other personnel how to deal with Plant Diseases									√
D3. Manage plant diseases projects									√

PLOS

After the successful completion of this program student should be able to:

1. Demonstrate a broad knowledge of core concepts in plant protection.
2. Demonstrate teaching competence through teaching assistance, seminars and speaking experiences.
3. Understanding, interpretation and synthesis of scientific literature pertaining to plant protection.
4. Formulate hypotheses; develop experimental designs to test these hypotheses; establish and maintain experiments.
5. Collect data in an objective way and perform appropriate statistical analyses.
6. Think critically, solve research problems, and draw conclusions in the field of specialization.
7. Interpret and present research results in oral and written formats.
8. Publish research in peer-reviewed scientific journals.
9. Maintain a leadership role in plant protection at the national and international levels.

21 Topic Outline and Schedule:

Week	Lecture	Topic	Intended Learning Outcome	Learning Methods	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	Introduction Why Ecology	A1,A2,C, D1-D3			Synchronous	Mid & final	1 ,2,6
	1.2	Epidemiology of Plant Diseases	A1,A2,C, D1-D3	Face to Face		Synchronous	Mid & final	1 ,2
2	2.1	Epidemiology of Plant Diseases	A1,A2,C1, D1-D3	Face to Face		Synchronous	Mid & final	1,2,3,5,10,11
	2.2	Influence of physical factors on Epidemics	A3, B1,C1, D1-D3	Face to Face		Synchronous	Mid & final	
3	3.1	Influence of physical factors on Epidemics		Online	Moodle, Microsoft teams	Asynchronous	Mid & final	
	3.2	Influence of physical factors on Epidemics		Online	Moodle, Microsoft teams	Asynchronous	Mid & final	
4	4.1	Influence of physical factors on Epidemics		Face to Face		Synchronous	Mid & final	
	4.2	Influence of physical factors on Epidemics		Face to Face		Synchronous	Mid & final	
5	5.1	Influence of physical factors on Epidemics		Face to Face		Synchronous	Presentation	
	5.2	Influence of physical factors on Epidemics	Face to Face		Synchronous	Mid & fina Presentation l		
6	6.1	Influence of chemical factors on Epidemics	A3, B1, C1, D1-D3	Face to Face		Synchronous	Mid & final	1,2,9, 12,13
	6.2	Influence of chemical factors on Epidemics		Face to Face		Synchronous	Mid & final	
7	7.1	Influence of chemical factors on Epidemics		Online	Moodle, Microsoft teams	Asynchronous	Mid & final	
	7.2	Influence of chemical factors on Epidemics		Online	Moodle, Microsoft teams	Asynchronous	Mid & final, Presentation	
8	8.1	Influence of chemical factors on Epidemics		Face to Face		Synchronous	Mid & final,	

							Presentation		
	8.2	Influence of biological factors on Epidemics	A3, B1,C1, D1-D3	Face to Face		Synchronous		1,2,4,8,7	
9	9.1	Influence of biological factors on Epidemics,		Online	Moodle, Microsoft teams	Asynchronous	Final		
	9.2	Influence of biological factors on Epidemics,		Online	Moodle, Microsoft teams	Asynchronous	Final		
10	10.1	Mid term							
	10.2	Influence of biological factors on Epidemics							
11	11.1	Influence of biological factors on Epidemics		Face to Face					
	11.2	Influence of biological factors on Epidemics,		Online	Moodle, Microsoft teams	Asynchronous	Final		
12	12.1	Influence of biological factors on Epidemics, Instrumentation		Online	Moodle, Microsoft teams	Asynchronous	Final		
	12.2	Influence of biological factors on Epidemics, Instrumentation		Face to Face		Synchronous	Final		
13	13.1	Management of diseases		A4, D3	Face to Face		Synchronous	Final	1,2, 9, 13, 14
	13.2	Management of diseases			Face to Face		Synchronous	Final	
14	14.1	Management of diseases	Online		Moodle, Microsoft teams	Asynchronous	Final		
	14.2	Management of diseases	Online		Moodle, Microsoft teams	Asynchronous	Final		
15	15.1	Management of diseases	Face to Face			Synchronous	Project , Students		
	15.2	Management of diseases	Face to Face			Synchronous	Project students		



22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First Mid-Term Exam	30	W1-w8	A1-C1	8 th week	
Presentation, Assignments Quizzes Final project	8 8 4 10	W3-W14	D1-D3	At the end of each topic	Moodle, Microsoft teams
Final Exam	40%	W1-W15all topics	A1-C1	Will be announced from registrar	

23 Course Requirements

(e.g: students should have a computer, internet connection, webcam,

24 Course Policies:

A- Attendance policies:

<15% , <20% with a permission ; medical report

B- Absences from exams and submitting assignments on time:

- **Assignments will not be accepted after deadline**
- **Absence of exams with a medical report must be submitted following regulations and a makeup exam will be scheduled within one week**

C- Health and safety procedures:

- **Mask must be worn all the time in class and lab**
- **Social distancing**

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

From (%)	To (%)	Scale	Mark	Result
0	54	0	C	Acceptable
55	59	2.5	C+	Good
60	64	2.75	B-	Good
65	74	3	B	Very Good
75	79	3.5	B+	Very Good
80	84	3.75	A ⁻	Excellent
85	100	4	A	Excellent

F- Available university services that support achievement in the course:

25 References:



A- Required book(s), assigned reading and audio-visuals:

Text Book :

1. Cooke and B. Kaye. 2006. The Epidemiology of Plant Diseases. Second Edition University College Dublin, Ireland University College Dublin, Ireland D. GARETH JONES.
2. Fry, W. 1982. Principles of Plant Disease Management. Academic press, Inc. New York. 378 pp.

References updated each semester

3. Abbas, H. K., Egle, G. H., and Paul, R. N. 1995. Effect of conidia production temperature on germination and infectivity of *Alternaria helianthi* . Phytopathology, 85: 677-682.
4. Bahar, MD., Wist, Tyler, W., Bekkaoui, D., Dwayne, H., Chrystel, O. 2018. Aster leafhopper survival and reproduction, and Aster yellows transmission under static and fluctuating temperatures, using ddPCR for phytoplasma quantification. Scientific Reports. 8 10.1038/s41598-017-18437-0
5. Brodie, B. B. 1993. Probability of *Globodera rostochiensis* spread on equipment and potato tubers. Journal of Nematology, 25: 291-296.
6. Burdon JJ, Zhan J. 2020. Climate change and disease in plant communities. PLoS Biol 18(11): e3000949. <https://doi.org/10.1371/journal.pbio.3000949>
7. Chatzivassiliou, E. k., Peters, d., and katis, N. I. 2002. The efficiency by which *Thrips tabaci* populations transmit *tomato spotted wilt virus* depends on their host preference and reproductive strategy. Phytopathology, 92: 603-609.
8. Ciliberti, N., Fermaud, M, Languasco, L. and Rossi, V. 2015. Influence of Fungal Strain, Temperature, and Wetness Duration on Infection of Grapevine Inflorescences and Young Berry Clusters by *Botrytis cinerea* Phytopathology, 105, 325-333.
9. Lalancette, N., and Robinson, D. M. 2002. Effect of fungicides, application timing, and canker removal on incidence and severity of constriction canker of peach. Plant Disease, 86: 721-728.
10. Michailides, T. J., and Morgan, D. P. 1993. Spore release by *Botryosphaeria dothidae* in Pistachio orchards and disease control by altering the trajectory angle of sprinklers. Phytopathology, 83: 145-152.
11. Scherm, H. and Van Bruggen. 1995. Concurrent spore release and infection of lettuce by *Bremia lactucae* during mornings with prolonged leaf wetness. Phytopathology, 85: 550-555
12. Stanley, M. S., Callow, M. E., Perry, R., Albert, R. S., Smith, R., and Callow, J. A. Inhibition of fungal spore adhesion by zosteric acid as the basis for a novel , nontoxic crop protection technology. Phytopathology, 92: 378-383
13. Rajasekharan, SK., Lee, JH., Ravichandran, V., Kim, JC., Park, JG and Le, J. 2019. Nematicidal and insecticidal activities of halogenated indoles Scientific Reports 9:2010 <https://doi.org/10.1038/s41598-019-38561-3>
14. Van der Heyde, H., Dutilleul, P., Charron, JB., Bilodeau, GJ and Carisse, O. 2021. Monitoring airborne inoculum for improved plant disease management. Agronomy for Sustainable Development (2021) 41(40): 1-23

Videos In class and will be deposited on elearning

Highlighted papers are Students presentations

Students Projects :

1. Ecology and Management of Downy mildew of lettuce in Jerash area
2. Ecology and Management of Tomato spotted wilt virus on tomato in Jordan Valley
3. Ecology and Management of Potato cyst nematode on potato in JV
4. Ecology and Management of Aster yellow of Chrysanthemum in Emirates area or JV



5. Ecology and Management of Constriction canker on Peaches in Mafrag area

26 Additional information:

Name of Course Coordinator: -----Signature: ----- Date: -----
Head of Curriculum Committee/Department: ----- Signature: -----
Head of Department: ----- Signature: -----
Head of Curriculum Committee/Faculty: ----- Signature: -----
Dean: ----- Signature: -----