

Course Syllabus

1.	Course title	Identification of Phytopathogenic Bacteria
2.	Course number	606725
3.	Credit hours	3
	Contact hours (theory, practical)	3 Credit hours, Theory: Mon, Wed, 17:30-19:00
4.	Prerequisites/corequisites	-
5.	Program title	☐ BSc ☒ MSc ☐ PhD in Plant Protection
6.	Program code	
7.	Awarding institution	The University of Jordan
8.	School	School of Agriculture
9.	Department	Plant Protection
10.	Course level	Master
11.	Year of study and semester (s)	Second semester -2023/2024
12.	Other department (s) involved in teaching the course	-
13.	Main teaching language	English
14.	Delivery method	☐ Face to face learning ☒ Blended ☐ Fully online
15.	Online platforms(s)	☒ Moodle ☒ Microsoft Teams ☐ Skype ☐ Zoom ☐ Others.....
16.	Issuing/Revision Date	25.02.2024

SUJ-01-05-01A	رقم النموذج	نموذج مخطط مادة دراسية/ انجليزي Course Syllabus
	تاريخ الإصدار	
	رقم وتاريخ المراجعة أو التعديل	
	رقم قرار اعتماد مجلس العمداء	
	تاريخ قرار اعتماد مجلس العمداء	
11	عدد الصفحات	

17. Course Coordinator:

Name: Dr. Nehaya Al-Karablieh	Contact hours: Mon 12:00 – 13:00;
	Tue 12:30-13:30; Wed : 12:00 – 13:00
Office number: 184	Phone number: 22343
Email: n.alkarablieh@ju.edu.jo	

18. Other instructors:

Name: Non
Office number:
Phone number:
Email:
Contact hours:

19. Course Description:

This course aims to learn different techniques used for isolation, identification and detection of phytopathogenic bacteria using morphological methods, biochemical, serological and physiological tests, in order to distinguish between the different genera, species and subspecies of phytopathogenic bacteria.

20. Course aims and outcomes:

A- Aims:

The major objective of this module is to learn different techniques used for isolation, identification, detection and differentiation of plant pathogenic bacteria based on isolation techniques, morphological, biochemical, physiological, toxins, fatty acid, serological, molecular and proteomic methods with the focus on those found in Jordan and on quarantined ones.

B- Course Learning Outcomes (CLOs): Upon successful completion of this course, students will be able to:

Successful completion of the course should lead to the following outcomes:

A. Knowledge and Understanding: Student is expected to

A1- Be able to differentiate between different genera of plant pathogenic bacteria

A2- Be able to differentiate between different species and pathovars within the genus of plant pathogenic bacteria

B. Intellectual Analytical and Cognitive Skills: Student is expected to

B1- Know the different techniques used to detect and identify plant pathogenic bacteria

B2- Differentiate between techniques used to detect and identify plant pathogenic bacteria

C. Subject- Specific Skills: Students is expected to

C1- Use different software's used in bacterial identification

C2- Use different online database used in bacterial identification

D. Transferable Key Skills: Students is expected to

D1- Identify and Classify unknown organism based on potential results

B- Program Learning Outcomes (PLOs):

1. Implementing advanced concepts and processes in various disciplines in plant protection.

2. Extracting information and research results in plant protection.

3. Planning, conducting and analyzing the results of scientific research.

4. Communicate effectively with supervisors and colleagues verbally and in writing.

5. Employing the acquired experience and skills in developing production, research and extension at various levels in the public and private sectors in Jordan and the world.

6. Participate efficiently in the scientific work team.

7. Publishing research in the field of plant protection in peer-reviewed scientific journals.

8. Commitment to the ethics and compliance responsibilities of being an agricultural engineer, especially in relation to the agricultural sector, environment and society

CLOs	PLOs							
	1	2	3	4	5	6	7	8
A1- Be able to differentiate between different genera of plant pathogenic bacteria	X							
A2- Be able to differentiate between different species and pathovars within the genus of plant pathogenic bacteria	X							
B1- Know the different techniques used to detect and identify plant pathogenic bacteria		X						
B2- Differentiate between techniques used to detect and identify plant pathogenic bacteria			X	X				
C1- Use different software's used in bacterial identification					X			X
C2- Use different online database used in bacterial identification					X	X	X	X
D1- Identify and Classify unknown organism based on potential results					X	X	X	X

21. Topic Outline and Schedule:

Week	Lecture	Topic	Intended Learning Outcome	Learning Methods Face to Face (FF) Blended (B) Fully Online (FO)	Platform MS teams (MS) Moodle (M))	Lecturing Synchronous (S) Asynchronous (AS)	Evaluation Methods Assignment (A) Exam (E) Presentation (P) Quiz (Q) Report (R)	Resources
1	1.1	Revision for basic bacteriology	A1-2, B1-2, C1-2, D1	FF	MS, M	S	E	1-6
	1.2	Revision for basic bacteriology		B	MS, M	A	E	1-6
2	2.1	Revision for basic bacteriology		FF	MS, M	S	E	1-6
	2.2	Family I: <i>Rhizobiaceae</i> Genus II. <i>Agrobacterium</i>		B	MS, M	A	E	1-6
3	3.1	Family: <i>Burkholderiaceae</i> Genus VII. <i>Ralstonia</i>		FF	MS, M	S	E	1-6
	3.2	Family: <i>Comamonadaceae</i> Genus <i>Acidovorax</i>		B	MS, M	A	E	1-6
4	4.1	Family:	A1-2,	FF	MS, M	S	E	1-6

		<i>Xanthomonadaceae</i>	B1-2, C1-2, D1					
	4.2	Genus I. <i>Xanthomonas</i>		B	MS, M	A	E	1-6
5	5.1	Genus XI. <i>Xylella</i>		FF	MS, M	S	E	1-6
	5.2	Genus <i>Xylophilus</i>		B	MS, M	A	E	1-6
6	6.1	Family: <i>Pseudomonadaceae</i> Genus I. <i>Pseudomonas</i>		FF	MS, M	S	E	1-6
	6.2	Family: <i>Pseudomonadaceae</i> Genus VI. <i>Rhizobacter</i>		B	MS, M	A	E	1-6
7	7.1	Revision			MS, M	S	E	1-6
	7.2	Eid AlFitar Holiday						
8	8.1	Midterm Exam 15.04.2024 FF						
	8.2	Family : <i>Enterobacteriaceae</i>	A1-2, B1-2, C1-2, D1	FF	MS, M	S	E	1-6
9	9.1	Genus XIII. <i>Erwinia</i>		B	MS, M	A	E	1-6
	9.2	Genus XXIII. <i>Pantoea</i>		FF	MS, M	S	E	1-6

10	10.1	Genus XXIV. <i>Pectobacterium</i>		B	MS, M	A	E	1-6
	10.2	Labor day						
11	11.1	Genus XXV. "Candidatus Phlomobacter		B	MS, M	A	E	1-6
	11.2	Clavibacter michiganensis		FF	MS, M	AS	E	1-6
12	12.1			B	MS, M	S	E	1-6
	12.2	Student Presentation	D1	FF	MS	S	E	
13	13.1	Student Presentation	D1	FF	MS	S	P	
	13.2	Student Presentation	D1	FF	MS	S	P	
14	14.1	Student Presentation	D1	FF	MS	S	P	1
	14.2	Student Presentation	D1	FF	MS	S	P	1
Final Exam based on university schedule								

22. Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	CLOs	Period (Week)	Platform
Midterm Exam	30	Week 1-6	A1-2 B1-2 C1-2	8	FF
Student Presentation	30	Determined later	A1-2 B1-2 C1-2	Week 12, 13, 14	FF
Final exam	40	all	all	University Schedule	FF

23. Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

- Students should have a computer, internet connection, and account on Microsoft teams to have access to course materials and some course activities.

24. Course Policies:

A- Attendance policies:

Students should attend all classes on time.

B- Absences from exams and submitting assignments on time:

Students should not be absent from exams and if they do then a convincing excuse should be provided within 24 h after the exams. Assignments should be submitted on their schedule.

C- Health and safety procedures:

- When in class, students should follow safety measures by wearing masks and keeping at least one meter between each other.
- General Laboratory instructions will be explained and discussed with the students during laboratory work.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

According to university regulations, For more details on University regulations please visit

<https://units.ju.edu.jo/ar/LegalAffairs/Regulations.aspx>

E- Grading policy:

As mentioned in section 22, and according to university regulations

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

Literature room and Data show, Teaching laboratory, etc.

25. References:

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

1. Agrios, G. N. 2005. Plant Pathology. 5th edition. University of Florida, Academic Press.
2. Janes, J.D. 2005. Phytobacteriology Principles and Practices. Plant protection service. Wageningen. The Netherlands.
3. Krieg and Holt. 1984. Bergey's Manual of Systemic Bacteriology. Second edition. Lippincott Williams and Wilkins.
4. EPPO/Bulletin Diagnostic protocols. Online database.
5. Schaad, N.2002 Laboratory Guide for Plant Pathogenic Bacteria. APS.
6. Madigan, M.T. and Martinko, J. M. 2005. Brock Biology of Microorganisms, 11th edition. Southern Illinois University Carbondale, Pearson Education International.

Recommended books, materials, and media:

7. Bradbury, J. F. 1986. Guide to Plant Pathogenic Bacteria. CAB International Agricultural Institute, England.
8. Fahy.P. C., and Persley, G. J. 1983. Plant Bacterial Diseases. A diagnostic Guide. Academic Press. Orland.391 pp
9. Gnanamanickam S. Sam et al. 2006. Plant Associated Bacteria, springer. Netherland.
10. Goszczynska. J.J. Serfontein and S. Serfontein. 2000. Introduction to Practical Phytobacteriology. Bacterial Disease Unit, ARC-Plant Protection Research Institute. Pretoria, South Africa.
11. Perombelon, M .C. and Vander Wolf J. M. (2002). Methods for the detection and quantification of *Erwinia carotovora* subsp. *atroseptica* (*Pectobacterium carotovorum* subsp. *atrosepticum*) on potatoes: a laboratory manual, Scottish Crop Research Institute, Scotland, UK.

26. Additional information:

Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming, then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter, problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For final complaints, there will be a committee to review the grading the final exam.

Name of Course Coordinator: Dr. Nehaya Al-Karablieh----		Signature: -----	Date: -25.02.2024
Head of Curriculum Committee/Department: -----		Signature: -----	

Head of Department: -----		Signature: -----	
-			
Head of Curriculum Committee/Faculty: -----		Signature: -----	
-			
Dean: -----		Signature: -----	