1	**Course title**	Zoonotic diseases
2	**Course number**	0602932
3	**Credit hours (theory, practical)**	3
	Contact hours (theory, practical)	Sunday-Wednesday 10-12 am
4	**Prerequisites/corequisites**	
5	**Program title**	PhD animal production
6	**Program code**	
7	**Awarding institution**	Jordan University/ school of Agriculture
8	**School**	Jordan University
9	**Department**	Animal production
10	**Level of course**	PhD
11	**Year of study and semester (s)**	
12	**Final Qualification**	PhD
13	**Other department (s) involved in teaching the course**	
14	**Language of Instruction**	English
15	**Date of production/revision**	24/12/2025

16. Course Coordinator:

Professor FM Hayajneh
Sunday-Wednesday 10-12 am

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Name: Firas Mahmoud Hayajneh
Office number:112
Phone number:00962792799430
Email:firashope@gmail.com

18. Course Description:

As stated in the approved study plan.
This advanced PhD-level course examines zoonotic diseases at the human–animal–environment interface, with emphasis on mechanisms of emergence, transmission dynamics, and global health impact. Students explore bacterial, viral, parasitic, and prion zoonoses of major public health and veterinary significance, integrating concepts from epidemiology, molecular pathogenesis, immunology, and ecology. The course adopts a One Health framework, highlighting the roles of livestock production systems, wildlife reservoirs, food safety, and environmental change in zoonotic risk. Special attention is given to surveillance strategies, diagnostic tools, antimicrobial resistance, risk assessment, and evidence-based prevention and control measures. Through critical analysis of current literature, case studies, and research seminars, students develop skills in hypothesis formulation, experimental design, and scientific communication. The course prepares doctoral candidates for independent research, policy advisory roles, and leadership in zoonotic disease control at national and international levels.

19. Course aims and outcomes:

A- Aims:

Learning Objectives.

Upon completion of the course, students will learn:

1. Develop an advanced understanding of the biology, epidemiology, and pathogenesis of major zoonotic diseases.
2. Apply the One Health approach to analyze interactions between humans, animals, and the environment in disease emergence.
3. Critically evaluate current scientific literature and identify research gaps in zoonotic disease control.
4. Design and justify advanced research methodologies for studying zoonotic pathogens and transmission dynamics.
5. Assess zoonotic risks associated with animal production systems, wildlife, and food chains.
6. Evaluate surveillance, diagnostic, and control strategies, including biosecurity and antimicrobial resistance mitigation.
7. Communicate scientific findings effectively for academic, policy, and public health audiences.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to

A-Knowledge and Understanding

At end of this program the learner should be able to demonstrate knowledge and understanding of:

A1. In-depth knowledge of the classification, biology, and pathogenic mechanisms of major zoonotic agents (bacterial, viral, parasitic, and prion).

A2. Advanced understanding of zoonotic disease epidemiology, including transmission pathways, reservoirs, and risk factors.

A3. Comprehensive understanding of the One Health concept and its application to zoonotic disease

prevention and control.

A4. Critical awareness of global and regional zoonotic disease challenges, including emerging and re-emerging infections.

A5. Thorough understanding of surveillance systems, diagnostic approaches, and evidence-based control strategies for zoonotic diseases.

B- Intellectual Analytical and Cognitive Skills

At the successful end of this program, student will be able to:

B1. Critically analyze and synthesize advanced scientific literature related to zoonotic diseases.

B2. Formulate original research questions and hypotheses addressing complex zoonotic disease problems.

B3. Apply advanced epidemiological and biostatistical reasoning to interpret zoonotic disease data.

B4. Evaluate and compare diagnostic, surveillance, and control strategies using evidence-based criteria.

B5. Integrate multidisciplinary data (veterinary, medical, environmental) to assess zoonotic risks.

B6. Analyze the impact of socio-economic, ecological, and management factors on zoonotic disease emergence.

B7. Demonstrate high-level critical thinking in proposing innovative and sustainable zoonotic disease control solutions.

B8. Critically assess national and international policies, guidelines, and regulatory frameworks related to zoonotic disease prevention and control, and their implications for research and public health decision-making.

C- Subject Specific Skills

Having successfully completed the program, students must be able to:

C1. Identify major zoonotic pathogens affecting livestock, wildlife, and humans.

C2. Analyze epidemiological patterns and risk factors of zoonotic diseases.

C3. Apply advanced diagnostic techniques to detect zoonotic infections.

C4. Evaluate and implement biosecurity and control measures in animal populations.

C5. Interpret laboratory and field data to inform disease management strategies.

C6. Develop research proposals targeting the prevention and control of zoonotic diseases

D- Transferable Key Skills
Having successfully completed the program, the student should be able to:

D1. Critical thinking and problem-solving: Ability to analyze complex problems and propose evidence-based solutions.

D2. Scientific communication: Effective writing and presentation skills for academic, professional, and public audiences.

D3.Research management: Planning, organizing, and managing research projects efficiently.

D4. Data analysis and interpretation: Proficiency in statistical, computational, and bioinformatics tools.

D5Collaboration and leadership: Working effectively in multidisciplinary teams and leading research initiatives.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluative methods	Reference
Introduction to Zoonotic Diseases • Definition,	1	Dr Firas Hayajneh	A1,C2	Lectures, discussions, exams, presentations	**Oxford Textbook of**

	classification, and global significance • Overview of major zoonotic pathogens					**Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Epidemiology of Zoonotic Diseases • Disease transmission cycles • Host-pathogen-environment interactions	2	Dr Firas Hayajneh	A1,C2	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Bacterial Zoonoses • Anthrax, Brucellosis, Leptospirosis • Diagnosis, treatment, and control strategies	3	Dr Firas Hayajneh		Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) —

						Edited by S.R. Palmer
	Viral Zoonoses • Rabies, Avian Influenza, Ebola • Molecular detection methods and outbreak response	4	Dr Firas Hayajneh	A2,A3,B3,B4 A5	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Parasitic Zoonoses • Toxoplasmosis, Cysticercosis, Cryptosporidiosis • Life cycles, epidemiology, and control	5	Dr Firas Hayajneh	A3,B3, D5	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Fungal and Emerging Zoonoses • Cryptococcosis, Histoplasmosis, and novel pathogens • Risk factors and surveillance	6	Dr Firas Hayajneh	A3,B3	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Diagnostic Techniques in	7	Dr Firas Hayajneh	A4,B3,C4	Lectures, discussions, exams,	**Oxford Textbook of**

	Zoonotic Diseases • *Laboratory methods: serology, PCR, culture* • *Interpretation of diagnostic results*				presentations	**Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Antimicrobial Resistance and Zoonoses (a) Mechanisms of resistance (b) Public health implications	8	Dr Firas Hayajneh	D3,C4, A5	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Biosecurity and Disease Control in Farm Animals • *Farm management practices* • *Vaccination strategies*	9	Dr Firas Hayajneh	D1,B2, D5	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Wildlife and Environmental Zoonoses ▪ Role of wildlife reservoirs ▪ Ecological and environmental risk	10	Dr Firas Hayajneh	D1,A4,D3,C4, D4	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health**

	factors ▪					**Control** (2nd Edition) — Edited by S.R. Palmer
	Foodborne Zoonoses • Salmonellosis, Campylobacteriosis, Listeriosis • Food safety practices and regulations	11	Dr Firas Hayajneh	D4	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	One Health Approach ▪ Integration of human, animal, and environmental health ▪ Case studies of successful interventions ▪	12	Dr Firas Hayajneh	D1,A4,D3,C4	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
	Research Methods in Zoonotic Disease Studies • Epidemiological study designs • Data collection, analysis, and interpretation	13	Dr Firas Hayajneh	B2, C2, A1, D3	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer

	Student Presentations & Course Review • *Research proposal presentations* • *Discussion, feedback, and exam preparation*	14	Dr Firas Hayajneh	D1, D3, C2	Lectures, discussions, exams, presentations	**Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer	

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements: Lectures, discussions, exams, presentations

23. Course Policies:

A- Attendance policies: B- Absences from exams and handing in assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

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

24. Required equipment: (Facilities, Tools, Labs, Training….)

25. References:

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

Recommended books, materials, and media:

1. **Oxford Textbook of Zoonoses: Biology, Clinical Practice, and Public Health Control** (2nd Edition) — Edited by S.R. Palmer
2. **Additional recommended references (optional):**
   • *Zoonoses: Infections Affecting Humans and Animals* (Springer reference work, 2023) — advanced coverage from a One Health perspective. Springer
3. • *Textbook of Zoonoses* by Bedi, Vijay & Dhaka — modern overview of major zoonotic diseases. Wiley-VCH
   • WHO regional publications on zoonotic diseases providing epidemiological and control insight

26. Additional information:

Name of Course Coordinator: Firas Hayajneh Signature: ---------- Date: 24/12/2025

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------