



Digitally signed by
Technical Scientific
Library, TUM
Reason: I attest to the
accuracy and integrity of
this document

UNIVERSITATEA TEHNICĂ A MOLDOVEI

FACULTATEA MEDICINĂ VETERINARĂ

**DEPARTAMENTUL SIGURANȚA ALIMENTELOR
ȘI SĂNĂTATE PUBLICĂ**

Natalia OSADCI Nicolae STARCIUC

MICROBIOLOGY-2

COURSE SUPPORT



2026

CZU 579.62(075.8)

O-83

Lucrarea a fost discutată și aprobată pentru editare la ședința Consiliului Facultății de Medicină Veterinară, proces-verbal nr. 4 din 19 martie 2026.

This course support is designed for students of the Faculty of Veterinary Medicine, specialty 0841.1 Veterinary Medicine, and provides a systematic presentation of the fundamental concepts and mechanisms specific to „Microbiology - 2”. The material clearly and comprehensively explains the morphology, taxonomy, pathogenicity, and epidemiology of microorganisms of veterinary importance, including bacteria agents affecting animals.

Particular emphasis is placed on host–pathogen interactions, mechanisms of microbial virulence, immune responses, laboratory diagnostic methods, and principles of prevention and control of infectious diseases in animals. Its coherent structure and detailed explanations facilitate the understanding of the etiological agents responsible for major animal diseases, forming the basis for accurate diagnosis, effective treatment, and implementation of biosecurity measures. This support serves as a solid theoretical foundation, indispensable for veterinary students in identifying, diagnosing, preventing, and controlling infectious diseases in veterinary practice.

Authors: Associate professor, PhD, Natalia OSADCI

Professor, Habilitated Doctor Nicolae STARCIUC

Reviewer: Assistant professor, PhD Dmitrii MAȚENCU

DESCRIEREA CIP A CAMEREI NAȚIONALE A CĂRȚII DIN RM

Osadci, Natalia.

Microbiology-2: course support / Natalia Osadci, Nicolae Starciuc;
Universitatea Tehnică a Moldovei, Facultatea Medicină Veterinară,
Departamentul Siguranța Alimentelor și Sănătate Publică.

– Chișinău: Tehnica-UTM, 2026. – 105 p.: fig. color.

Bibliogr.: p. 105. – 30 ex.

ISBN 978-9975-64-659-8.

Text: nemediat.

579.62(075.8)

O-83

TABLE OF CONTENTS

1. The genus Streptococcus.....	5
1.1. Morphological characters.....	5
1.2. Environments and cultural characteristics.....	8
1.3. Pathogenicity and antigenic structure.....	9
1.4. Experimental and natural infection.....	10
2. The genus Staphylococcus.....	12
2.1. Morphological characters.....	12
2.2. Environments and cultural characteristics.....	13
2.3. Pathogenicity and antigenic structure.....	14
2.4. Experimental and natural infection.....	16
3. The genus Escherichia.....	20
3.1. Morphological characters.....	20
3.2. Media, culture and biochemical characters.....	21
3.3. Antigenic structure and pathogenicity of the species involved.....	22
3.4. Experimental and natural infection.....	24
4. Genus Salmonella.....	27
4.1. Morphological characters.....	27
4.2. Environments and cultural characteristics.....	30
4.3. Biochemical properties.....	31
4.4. Antigenic structure and pathogenicity elements.....	32
4.5. Experimental and natural infection.....	32
5. The genus Pasteurella.....	35
5.1. Morphological characters.....	35
5.2. Environments and cultural characteristics.....	36
5.3. Biochemical, biological properties, antigenic structure.....	37
5.4. Pathogenicity and its elements.....	37
5.5. Experimental and natural infection.....	37
6. The genus Erysipelothrix	40
6.1. Morphological characters.....	40
6.2. Biochemical and biological properties.....	41
6.3. Antigenic structure.....	42
6.4. Experimental and natural infection.....	42
7. The genus Listeria.....	44
7.1. Morphological characters.....	44
7.2. Biochemical and biological properties.....	45
7.3. Antigenic structure.....	46
7.4. Experimental and natural infection.....	46
8. The genus Brucella.....	48
8.1. Morphological, cultural, biochemical characters.....	48
8.2. Antigenic structure and allergy test.....	49
8.3. Experimental infection.....	51
8.4. Natural infection.....	52
9. The genus Mycobacterium.....	55
9.1. Morphological, cultural and biochemical properties.....	55

9.2. Antigenic structure.....	58
9.3. Pathogenicity and allergic test in tuberculosis.....	60
9.4. Experimental and natural infection.....	63
10. The genus Pseudomonas.....	66
10.1. Morphological, cultural and biochemical properties.....	66
10.2. Antigenic structure.....	66
10.3. Experimental infection.....	67
10.4. Natural infection.....	67
11. The genus Bacillus.....	70
11.1. Morphological, cultural and biochemical properties.....	70
11.2. Antigenic structure.....	71
11.3. Pathogenicity and its elements.....	73
11.4. Experimental and natural infection.....	74
12. The genus Clostridium.....	77
12.1. General characteristics of the genus Clostridium.....	77
12.2. Morphological, cultural, biochemical properties of the species Cl. chauvoei, Cl. botulinum, Cl. perfringens, Cl. tetani, Cl. septicum, Cl. novy.....	78
12.3. Pathogenicity and its elements.....	79
12.4. Experimental and natural infection.....	82
13. The genus Leptospira.....	100
13.1. Morphological, cultural and biochemical properties.....	100
13.2. Antigenic structure.....	101
13.3. Pathogenicity and its elements.....	101
13.4. Experimental infection.....	102

BIBLIOGRAPHY

- Gilbert, M. (2022). *Antimicrobial Resistance in Veterinary Medicine* (1st ed.). Wiley-Blackwell.
- Greene, C. E. (2022). *Infectious Diseases of the Dog and Cat* (5th ed.). Saunders.
- Gyles, C. L., & Prescott, J. F. (2014). *Pathogenesis of Bacterial Infections in Animals* (4th ed.). Wiley-Blackwell.
- Herring, A. R., & Shaw, D. R. (2020). *Zoonotic Pathogens in Veterinary Medicine* (1st ed.). Springer.
- Miller, W. H., & Griffin, C. E. (2013). *Miller's Guide to the Diagnosis and Treatment of Skin Diseases of the Dog and Cat* (3rd ed.). Wiley-Blackwell.
- Müller, H., & Pfeiffer, D. (2021). *Microbial Pathogenesis in Poultry* (1st ed.). Springer.
- O'Neill, D. G., & Bennett, P. (2019). *Veterinary Microbiology for Small Animals: An A-Z of Common Diseases* (1st ed.). CRC Press.
- Pappas, P. G., & Kauffman, C. A. (2021). *Fungal Infections in Animals* (1st ed.). Springer.
- Quinn, P. J., Markey, B. K., Carter, M. E., Donnelly, W. J., & Leonard, F. C. (2020). *Veterinary Microbiology and Microbial Disease* (3rd ed.). Wiley-Blackwell.
- Zinner, D. E., & Zinner, M. S. (2017). *Microbiology for the Health Sciences* (7th ed.).

Bun de tipar 04.05.26
Hârtie ofset. Tipar RISO
Coli de tipar 13,25

Formatul hârtiei 60x84 1/8
Tirajul 30 ex.
Comanda nr. 53

MD-2004, Chişinău, bd. Ştefan cel Mare şi Sfânt, 168, UTM
MD-2045, Chişinău, str. Studenţilor, 9/9, Editura „Tehnica-UTM”