**University of Life Sciences "Ion Ionescu de la Brad" Iași**
**Faculty of Veterinary Medicine**
**Specialty: Veterinary Medicine**
**Department - Public Health**
**Discipline: Microbiology**

**Approved,**
**Dean,**
**Prof. PhD Mihai MAREȘ**

# COURSE OUTLINES
## Academic year2021/2022

**1. Information on the programme**

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| 1.1. Higher education institution | University of Life Sciences "Ion Ionescu de la Brad" Iași |
| 1.2. Faculty | Veterinary Medicine |
| 1.3. Department | XI – Public Health |
| 1.4. Field of study | Veterinary Medicine |
| 1.5.Cycle of study[1] | Bachelor and Master (unitary study programme) |
| 1.6. Specialization/ Study programme | Veterinary Medicine |
| 1.7. Form of education | Full time |

**2. Information on the discipline**

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| 2.1. Name of the discipline | **Microbiology** | | | | | | | |
| 2.2. Course coordinator | | | | Assoc. Prof. PhD Cătălin Carp Cărare | | | | |
| 2.3. Seminar/ laboratory/ project coordinator | | | | Assoc. Prof. PhD Cătălin Carp Cărare | | | | |
| 2.4. Year of study | II | 2.5. Semester | 4 | 2.6. Type of evaluation | Exam | 2.7. Discipline status | Content[2] | FD |
| | | | | | | | Compulsoriness[3] | CD |

**3. Total estimated time** (teaching hours per semester)

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| 3.1. Hours per week – full time programme | 4 | out of which: 3.2. lecture | 2 | 3.3. laboratory | 2 |
| 3.4. Total number of hours in the curriculum | 56 | Out of which: 3.5.lecture | 28 | 3.6. laboratory | 28 |
| Distribution of the time allotted | | | | | hours |
| 3.4.1. Study based on book, textbook, bibliography and notes | | | | | 20 |
| 3.4.2. Additional documentation in the library, specialized electronic platforms and field | | | | | 10 |
| 3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays | | | | | 4 |
| 3.4.4.Tutorials | | | | | 2 |
| 3.4.5.Examinations | | | | | 2 |
| 3.4.6. Other activities | | | | | 2 |

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| 3.7. Total hours of individual study | 40 |
| 3.8. Total hours per semester | 96 |
| 3.9. Number of credits[4] | 4 |

**4. Prerequisites** (is applicable)

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| 4.1. curriculum-related | Biophysics, Biochemistry, Cell Biology • |
| 4.2. skills-related | - |

**5. Conditions** (if applicable)

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| 5.1. for the lecture | It is forbidden for students to use mobile phones during the lecture and to leave the lecture room to take personal phone calls. |
| 5.2. for the seminar/ laboratory/ project | Protective equipment: lab coat, gloves medical and protective mask.At practical work is required to study the materials presented in the lectures; each student will conduct an individual activity using the laboratory materials provided. Students must wear protective equipment during practical work. |

**6. Specific competences acquired**

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| Professional competences | Acquiring practical skills to establish a bacteriological diagnostic behavior in order to isolate certain genera and species of bacteria.<br>Identification of the main bacterial genera (species) with implications in veterinary infectious pathology, based on specific morphophysiological characteristics.<br>Acquiring various bacteriological diagnostic procedures according to the bacterial gender studied and learning techniques for the coloring of bacteria, according to their tinctorial affinity. |
| Transversal competences | Teamwork skills, oral and written communication in Romanian, use of information and communication technology - ICT, problem-solving and decision making, openness to lifelong learning, respect and development of the values of ethics and professional ethics<br>Documentation in Romanian and, at least, in a language of international circulation for the identification of new knowledge in the field, for the purpose of professional and personal development, through continuous training.<br>Formation of students in the scientific circle of microbiology. |

**7. Course objectives** (based on the list of competences acquired)

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| 7.1. Overall course objective | The discipline of Microbiology, according to the analytical program, has as its main objective the acquisition of the notions of special bacteriology, studying the main families, genera and bacterial species with implications in veterinary infectious pathology. |
| 7.2. Specific objectives | As specific objectives, the following are taken into consideration for each bacterial genus:<br>- History, taxonomy, ecology, resistance to environmental factors, sensitivity to antibiotics, cultivation and cultural characteristics, morphology, pathogenicity, natural infection, diagnostic conduct and the possibilities of immunoprophylaxis. |

**8. Content semester II**

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| **8.1. Courses Number of hours – 28**<br>• Cocci-shaped group: *1.1 Fam Staphylococcaceae. , 1.2 Fam. Streptococcaceae, 1.3 Fam. Neisseriaceae*<br>• Group of Gram-positive, unpolished bacilli.*2.1 Fam Listeriaceae: 2.2 Fam. Erysipelotrichaceae. 2.3 The genera Corynebacterium, Arcanobacterium*<br>• Group of Gram-positive, sporulated, aerobic bacilli: *3.1 Fam. Bacillaceae, Genus Bacillus*<br>• Group of Gram-positive, sporulated, anaerobic bacilli: *4.1 Fam. Clostridiaceae, Genus Clostridium*<br>• Group of Gram-positive, acid-alcohol-resistant Gram-negative bacilli: *5.1 Fam Mycobacteriaceae, 5.2 Fam. Nocardiaceae, 5.3 Fam. Actinomycetaceae*<br>• Group of Gram-negative, aerobic bacilli: *6.1 Fam. Enterobacteriacceae, 6.2 Fam. Pasteurellaceae, 6.3 Fam. Pseudomonadaceae, 6.4 Fam. Brucellaceae, 6.5Fam. Moraxellaceae, 6.6 Fam. Alcaligenaceae, 6.7 Fam. Legionellaceae*<br>• Group of anaerobic Gram negative bacteria: *7.1.Fam Cardiobateriaceae. 7.2. Fam. Fusobacteriaceae: Genus Fusobacterium*<br>• Group of curved elongated bacteria: *7.3 Fam. Vibrionaceae, 7.4 Fam. Aeromonadaceae, 7.5 Fam. Campylobacteriaceae*<br>• Group of bacteria with an elongated spiral shape*: 8.1 Fam. Leptospiraceae, 8.2 Fam. Spirochetaceae, 8.3 Fam. Spirillaceae*<br>• Group of soft-walled bacteria (*Mollicutes*): *9.1 Fam. Mycoplasmataceae 9.2 Fam. Anaeroplasmataceae 9.3 Fam. Spiroplasmataceae*<br>• Group of Rickettsians and Chlamydia: *10.1 Fam. Rickettsiaceae, 10.2 Fam. Chlamydiaceae* | PowerPoint presentation, interactive discussions, case study | A two-hour lecture once at two weeks |

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| **8.2. PRACTICAL WORK - Number of hours – 28**<br>• Cocci-shaped group: *Fam. Staphylococcaceae. : Genus Staphylococcus, Fam. Streptococcaceae: Genus Streptococcus*<br>• *Fam. Listeriaceae: Genus: Listeria, Fam. Erysipelotrichaceae Genus Erysipelotrix.*<br>• Non-family genera: *Corynebacterium, Arcanobacterium*<br>• *Fam. Bacillaceae, Genus Bacillus*<br>• *Fam. Clostridiaceae, Genus Clostridium*<br>• *Fam Mycobacteriaceae, Genus Mycobacterium* | PowerPoint presentations, | A 2-hour session weekly |

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| • *Fam. Enterobacteriaceae: genera: Escherichia, Klebsiella, Yersinia*<br>• *Fam. Enterobacteriaceae, genera: Salmonella, Serratia, Proteus*<br>• *Fam. Pasteurellaceae: Genus Pasteurella, Fam. Pseudomonadaceae: Genus Pseudomonas, Fam. Brucellaceae: Genus Brucella*<br>• *Fam Cardiobateriaceae, Fam.Fusobacteriaceae: Genus Fusobacterium, Fam. Vibrionaceae, Fam. Aeromonadaceae, Fam. Campylobacteriaceae*<br>• *Fam. Leptospiraceae, genus Leptospira* | | |

Bibliography

*Compulsory bibliography:*

Course notes – Powerpoint presentation

Carp Cărare Cătălin - General Microbiology, Ed. "Ion Ionescu de la Brad" Iași, 2014.

Guguianu Eleonora - General bacteriology, Venus Publishing House, Iași 2002;

Carp Cărare Cătălin, Eleonora Guguianu, Cristina Rîmbu - Special bacteriology, Practical works guide, "Ion Ionescu de la Brad" Publishing House, Iași, 2015

Lectures - Course notes on Moodle and Microsoft Teams platforms

Practical work - written materials on Moodle and Microsoft Teams platforms

*Optional bibliography:*


1. Răpuntean Gh., Răpuntean Sorin - Special veterinary bacteriology, Academic Pres Publishing House, Cluj-Napoca, 2005;
2. Carp-Cărare M., Eleonora Guguianu, Timofte Dorina - Practical works of veterinary microbiology. Internal use, UAMV, Iași, 1997.
3. Trif Radu. - Special bacteriology Brumar Publishing House, 1996


**9. Corroborating the course content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field**

- The course structure is related to the educational program of the public health disciplines department, constituting a transitional link between basic disciplines and specialized disciplines.
- In order to improve the contents, the choice of teaching / learning methods, the discipline holders participated in meetings with: members of the General Association of Veterinarians of Romania, College of Veterinarians of Romania, European professional training programs (POSDRU); as well as with other teachers in the field, tenured in other higher education institutions in the country and the European Union (Erasmus mobilities).

**10. Assessment**

| Type of activity | 10.1. Assessment criteria | 10.2. Assessment methods | 10.3. Percentage of the final grade |
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| **10.4. Courses** | Knowledge of the main genera and bacterial species of veterinary interest, based on the morphological and physiological characteristics specific to each genus and the use of this knowledge in the activity of prophylaxis-control of infectious diseases, as well as in the practice of bacteriological diagnosis. | Written evaluation | 70 % |
| **10.5. Laboratory** | The technique of examining cultural, morphological and biochemical characters in different bacterial genera.<br>Ability to perform smears, microscopic examination and assessment of morphological features. | Ongoing assessment during semester (written and oral evaluation) | 15 % |
| | | Present at the course | 15% |
| **10.6. Performance standards** | | | |
| Minimum performance standard (grade 5):<br>knowledge of morphological and physiological characters in the main bacterial genera and species with implications in veterinary pathology Active participation at specific activities during semester. | | | |

[1] Cycle of studies- choose of the three options: Bachelor/Master/Ph.D.

[2] Discipline status (content)- for the undergraduate level, choose one of the options:- **FD** (fundamental discipline), **BD**

(basic discipline), **CS** (specific disciplines-clinical sciences), **AP** (specific disciplines-animal production), **FH** (specific disciplines-food hygiene), **UO** (disciplines based on the university's options).

[3] Discipline status (compulsoriness)- choose one of the options – **CD** (compulsory discipline) **OD** (optional discipline) **ED** (elective discipline).

[4] One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

| Date | Course coordinator | Practical coordinator |
|---|---|---|
| 14.09.2021 | Assoc. Prof. PhD Cătălin Carp Cărare | Assoc. Prof. PhD Cătălin Carp Cărare |

Department Approval Date
14.09.2021

Department Director
Assoc. Prof. PhD Viorel-Cezar FLORIȘTEAN

Approved by Faculty Council on 17.09.2021