**Course description template**
Informing students on course requirements

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| Program: PhD full-time training, elective course |
| Course: **Chapters in Molecular Bacteriology** |
| Course code: **AOKDI-ASZV-42** |
| Academic year/Semester: 2025/26-I. |
| Educator and contact details (e-mail): **Dr. habil. József Sóki**, PhD soki.jozsef@med.u-szeged.hu |
| Type of course: lecture/seminar/practice/laboratory |
| Weekly hours of the course: 1 (hours during seven weeks that include 1 hour lecture, discussion and 30 min article referrals) |
| Credit vale of the course: 3 |
| Type of examination: final exam at the end of semester, practice exam, other:…….. |
| Preliminary requirements (preliminary academic performance or completed course required to fulfill the purposes and requirements of the course):<br><br>Completition of a gradual Microbiology course |
| Purpose of course:<br><br>The aim of the course is to provide PhD students taking the subject with a deeper insight mainly into the microbiology, pathogenicity and antibiotic resistance mechanisms of pathogenic bacteria by better understanding the molecular levels. |
| Outcome requirements of the course (specific academic results to be established by the course):<br><br>Upon completion of the course, students acquire modern knowledge from certain aspects of molecular bacteriology in accordance with the educational requirements of the Doctoral School (DI), in addition to general molecular biology knowledge, mainly in relation to infectious diseases. They must be able to use knowledge theoretically and practically. The knowledge gained helps them to better understand the material of other courses of DI and adds additional knowledge to them, helps them to learn molecular methods theoretically and use them in |

practice, so that they can carry out their work with high scientific demand during and after the training.

Topics:

1. Cell wall, cell division, replication and phylogenetics
2. Special bacterial cells, gram positive bacteria; transcription, stress responses
3. Complementary genetic elements, metagenomics
4. Conjugation and secretion, processes of energy recovery
5. Antibiotic resistance mechanisms
6. Virulence and pathogenicity islands
7. Anaerobic bacteria

Supporting methods to achieve learning outcomes:

1. High-quality ppt presentation with the latest important knowledge, knowledge level equalizing material at the start of the course
2. Interactive presentation, opportunity to discuss the material and ask questions
3. Literary processing/referencing tasks related to the topic of the lecture to help the material to be learned

Evaluation of the acquisition of expected learning outcomes:

Conditions for completing the course:
1. Conditions for completing the course:
- two of the sessions of the seven suitable courses are allowed to be absent for any reason (presentations will be made available)
- assessed activity in classes
- processing a sufficient number of publications (at least three out of 6 alkalons)
- in case of compliance with the above, signature at the end of the semester

2. End of semester ticket
- the written exam gives the grade, its requirements: 50 points test (last session, minimum requirement 50% completion, satisfactory 51-65%, medium 66-80%, good 81-90%, excellent >90%)

Mandatory reading list:

Medical Microbiology. Edited by Barer ML, Irving WL, Swann A, Perera N, Elsevier 2018 ISBN: 9780702071997

Recommended reading list:

Snyder L &Champness: Molecular Genetics of Bacteria, ASM Press 5th edition,

Washington 2020 ISBN 9781555819767

Salyers AA & Whitt DD: Bacterial Pathogenesis – A practical Approach. ASM Press 2nd edition Washington 2002 ISBN 1-55581-171-X

Plasmid Biology. Edited by Funnell BE & Phillips GJ, ASM Press Wasington 2004 ISBN 1-55581-265-1

Mascaretti OA: Bacteria versus Antibacterial Agents – an integrated approach. ASM Press Washington 2003 ISBN 1-55581-258-9

**Indicating course requirements on CooSpace scene (summary)**

Description (public):

The aim of the course is to provide PhD students taking the subject with a deeper insight mainly into the microbiology, pathogenicity and antibiotic resistance mechanisms of pathogenic bacteria by better understanding the molecular levels.

Requirements:

The output requirement is that students can deal independently with the molecular biology of bacteria both at theoretical (literature processing) and practical (conducting research) levels. Mastery Check: 50-point written test

Topics:

1. Cell wall, cell division, replication and phylogenetics
2. Special bacterial cells, gram positive bacteria; transcription, stress responses
3. Complementary genetic elements, metagenomics
4. Conjugation and secretion, processes of energy recovery
5. Antibiotic resistance mechanisms
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7. Anaerobic bacteria

Ppt lecture material, discussion, literary processing

Mandatory literature:

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