

## **Microbiology**

1. Lecturer: Vinnikova Olha Ivanivna, associate professor of the department of plant and microorganism physiology and biochemistry.
2. Status: compulsory for bachelors.
3. Course, semester: 2nd academic year, 3th semester.
4. Number of credits – 3, general academic hours – 108, including lectures – 18, laboratory practice – 36, self-study – 54.
5. Preliminary requirements: knowledge of the disciplines of natural science
6. Description of the course: course "Microbiology" has an integrative character. Within the course the prokaryote place in the organic world and current problems of taxonomy of microorganisms are considered. Major part of the course deals with morphology, cytology, genetics and biological characteristics of different groups of microorganisms. The course emphasizes a role of microorganisms in the biosphere and interactions with plants, animals and humans. It also describes a usage of microorganisms in different industries and modern biotechnology. A student being fully mastered in this course acquires practical skills to be necessary for a professional work in the field of biology, microbiology and biotechnology.

Sections: a place of microorganisms in the system of living beings; prokaryotic cell biology; sources of nutrition and energy for prokaryotes, biodiversity of prokaryotic microorganisms – bacteria and archaea; groups of chemotrophic and phototrophic prokaryotes, aspects of prokaryote genetics.

### Knowledge and skills:

- knowledge of systematics, morphology, cytology of prokaryotes, aspects of genetics of bacteria and archaea, a usage of microorganisms in industrial biotechnologies;
  - knowledge of interactions between microorganisms in nature;
  - understanding the role of microorganisms in biogeochemical cycles in the biosphere;
  - ability to prepare materials and sterilize laboratory glassware, skills in microbiological technique.
7. Course organization: lectures and laboratory classes (lab practice). Forms of control: tests, defense of laboratory reports, course work and exam.
  8. Language: Ukrainian.
  9. Educational and methodological support: program, schedule of classes, educational and scientific literature, multimedia presentations, methodical complex, guidelines for laboratory practice.

### Studentbooks:

1. *Gudz S.P., Gnatush S.O., Bilinska I.S.* Microbiology. – Lviv: Publish Centre of I. Franko Lviv National University, 2009. – 360 p.
2. *Netrusov A.I., Kotova I.B.* General Microbiology. – Moscow: Academia, 2007. – 283 p.
3. *Pinevich A.V.* Microbiology. Biology of Prokaryotes: 3 parts. – Saint-Petersburg: Publish centre of Saint-Petersburg University, 2004, 2007, 2009.
4. *Biology of the Prokaryotes*: (Russian edition) 2 parts / Edited by J. W. Lengeler, G. Drews and H. Schlegel. – Moscow: Mir, 2005 .
5. *Ecology of Microorganisms* / Edited by A.I. Netrusov. – Moscow: Academia, 2004. – 202 p.