

DESCRIPTION OF A STUDY COURSE – SYLLABUS

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|--|---|----------|--|--------------|---|
| Title of a course | Chemistry, Biochemistry and Microbiology Basics | | | | |
| Head of course | PhD Siniša Petrović, College Professor | | | | |
| Study programme | Professional undergraduate study Sustainable Agritourism | | | | |
| Status of a course | Obligatory | | | | |
| Year of study | 1. | Semester | I | ECTS credits | 5 |
| Teaching plan (L + E + S+ Pr) | 3L+2E | | | | |
| Goals of a course | | | | | |
| To acquaint students with the basic principles of chemical reactions and formation of compounds and the basics of chemical calculus. Inform about the types and uses of organic matter in plant production. Provide an overview of the main biochemical processes in the body and those that are used in the processing of agricultural products. Introduce students to different groups of microorganisms and principles of food microbiology. Expose different processes during canning and in fermentation processes of plant products. | | | | | |
| Conditions for enrolling course | | | | | |
| No conditions | | | | | |
| Learning outcomes on a level of a study programme which includes course | | | | | |
| Outcome 1: Explain the basic principles of chemistry, biochemistry, microbiology and botany required to work in the field of agriculture. | | | | | |
| Outcome 2: Assess the suitability of environmental and edaphic factors for sustainable plant and animal production. | | | | | |
| Outcome 3: Select species, assortments and breeds, as well as the technology for cultivation, breeding and maintaining the health of plants and animals. | | | | | |
| Outcome 5: Select the methods of processing and preserving raw materials of plant and animal origin, depending on the quality characteristics of the raw material and the application of microorganisms. | | | | | |
| Expected learning outcomes on a level of a course | | | | | |
| 1. Adopt basic chemical terms and solve computational problems. | | | | | |
| 2. Distinguish types of solutions and carry out measurements in a chemical laboratory. | | | | | |
| 3. Describe the properties and state the use of the elements and their inorganic compounds based on their chemical properties. | | | | | |
| 4. Distinguish organic compounds by their constitution and properties. | | | | | |
| 5. Explain the structure of the most important macromolecules, and describe the basic metabolic pathways and biochemical processes relevant to agriculture. | | | | | |
| 6. Describe the main groups of microorganisms and their role in nature and in the processing of agricultural products. | | | | | |
| Content of a course | | | | | |
| Structure of matter: atoms, molecules and compounds. The periodic table of elements. Chemical bonds. A state of matter. Relative atomic and molecular mass and amount of substance. Measurements and units in Chemistry. Types of solutions and quantitative expression of composition of solutions. Colloid solutions, acids and alkalis. Elements and compounds important tin the production and processing of agricultural products. Basics of organic chemistry: structure and characteristics of carbohydrates and their derivatives. Biochemical structure of the organism: proteins, sugars and fat. Vitamins, essential matter. An overview of important biochemical processes. Biochemical and organic-chemical transformations crucial for processing of agricultural products. Microorganisms: structure, classification and meaning in circulation of matter in nature. Microbiological processes in processing and preserving agricultural products and food. | | | | | |
| Teaching modes | <input checked="" type="checkbox"/> lectures <input type="checkbox"/> auditory exercises <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> distance learning | | <input checked="" type="checkbox"/> individual assignments <input type="checkbox"/> multimedia and network <input type="checkbox"/> laboratory <input type="checkbox"/> supervisor's work | | |

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| | <input type="checkbox"/> field classes | <input type="checkbox"/> other _____ |
| Comments | | |

Students' obligations

Grading, evaluation and monitoring of students' work continuously during lectures and exams

Grading is based upon evaluation of course's learning outcomes' adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.

Continuous check-up:

| Outcomes | Pre-exam I | Pre-exam 2 | Laboratory exercises | Home assignment | Threshold | Max |
|--------------------|------------|------------|----------------------|-----------------|-----------|-------|
| Outcome 1 | 18 | | 4 | 4 | 13 | 26 |
| Outcome 2 | 16 | | 4 | 4 | 12 | 24 |
| Outcome 3 | 6 | | | | 3 | 6 |
| Outcome 4 | | 10 | | | 5 | 10 |
| Outcome 5 | | 10 | 4 | | 7 | 14 |
| Outcome 6 | | 20 | | | 10 | 20 |
| Percentage of ECTS | 2 | 2 | 0.6 | 0.4 | | |
| Total | 40 | 40 | 12 | 8 | 50 % | 100 % |

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Exam term:

| Outcomes | Written exam | Oral exam | Max |
|--------------------|--------------|-----------|-------|
| Outcome 1 | 20 | 6 | 26 |
| Outcome 2 | 20 | 4 | 24 |
| Outcome 3 | 4 | 2 | 6 |
| Outcome 4 | 6 | 4 | 10 |
| Outcome 5 | 10 | 4 | 14 |
| Outcome 6 | 18 | 2 | 20 |
| Percentage of ECTS | 3.9 | 1.1 | |
| Total | 78 | 22 | 100 % |

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Grading:

A student has passed the exam if he has acquired at least 50% of anticipated credits of a specific learning outcome.

If a student has passed learning outcomes of all courses, the accomplished credits (percentages) of all passed learning outcomes are being added, while the final grade is defined upon following table:

| Range of credits (percentages) | Numerical grade | ECTS grade |
|--------------------------------|------------------|------------|
| 90,00 – 100,00 | Excellent (5) | A |
| 75,00 – 89,99 | Very good (4) | B |
| 60,00 – 74,99 | Good (3) | C |
| 50,00 – 59,99 | Sufficient (2) | D |
| 0,00 – 49,99 | Insufficient (1) | F |

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| Obligatory literature | |
| 1. | Amić D. Organska kemija za studente agronomске struke. Školska knjiga, Zagreb.2008. |
| 2. | Filipović I., Lipanović S. Opća i anorganska kemija I, II, Školska knjiga, Zagreb. 1995. |
| 3. | Petrović S. Uvod u biokemiju. Futura, Rijeka.2008. |
| 4. | Petrović S. Vježbe iz biokemije. Veleučilište u Rijeci, Rijeka. 2010. |
| 5. | Duraković S. i Redžepović S.Uvod u opću mikrobiologiju. Kugler, Zagreb.2003. |
| Additional literature | |
| 1. | Sikirica M. Stehiometrija, Školska knjiga, Zagreb. 2008. |
| 2. | Duraković. S. i Duraković L. Mikrobiologija namirnica – osnove i dostignuća. Kugler, Zagreb, 2001. |

