

Course title: <b>Biology</b>		
Programme: <b>Biotechnology</b>		Code: 5.3
Type of course: mandatory	Course level: I	Semester: <b>I</b>
Form of classes: lectures, laboratories	Number of hours per week/meeting: 2h L, 2h Lab	Credit points: 4 ECTS
Education profile: academic		Course language: English
Enrolment: yes		

## GUIDE TO THE SUBJECT

### **I. COURSE CHART**

#### **COURSE OBJECTIVES**

- C.1. Presentation of cells, tissues and organs of plant and animal organs
- C.2. Presentation of principles of systematics of living organisms
- C.3. Learning the basic techniques used in researching biological objects
- C.4. Familiarization with cellular and tissue structure of living organisms.
- C.5. Familiarization with the structure of selected pro- and eucaryotic organisms.

#### **PRELIMINARY COURSE REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Basic knowledge of biology in upper secondary school

#### **LEARNING OUTCOMES**

- EK 1 - knowledge about the organization and functioning of living matter.
- EK 2 - classifying and describing organisms on the basis of their origin and kinship.
- EK 3 - skills in preparation, staining and observation of biological preparations.
- EK 4 - characterization and differentiation of pro- and eukaryotic cells.
- EK 5 - characterizes and differentiates plant and animal tissues.

#### **COURSE CONTENT**

Form of classes - lectures	Hours
Characteristics of living organisms	2
Levels of organization of living matter	2
Cell - Cell wall, cytoplasm	2

Cell - Mitochondria, plastids, cell nucleus	2
Cell and plant organism as a whole. Differences between plant and animal cells	2
Animals and plants tissues	8
Organs and organ systems	4
Systematics of organisms	6
Summary of lectures	2
Form of classes – laboratories	<b>Hours</b>
Introduction to the subject, principles of occupational health and safety in the biology lab	2
Principles of operating the microscope and preparing and observing biological preparations.	4
Fundamentals of Staining Techniques..	4
Morphology of plant and animal cells.	4
Selected physiological processes at the cellular level.	2
Test	2
Overview of plant tissues	4
Overview of animals tissues	4
Overview of selected groups of organisms	2
Test and identification of plant and animal tissues	2

### **COURSE STUDY METHODS**

1. blackboard, interactive whiteboard, multimedia presentation
2. Devices and equipment used in the biology laboratory.
3. Information panels and educational guides.

### **METHODS OF ASSESMENT ( F - formative; S - summative)**

F1. - activity in the classes
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F2. - evaluation of laboratory exercises
P1. test

### STUDENT WORKLOAD

Form of activity	Workload (hours)
Participation in lectures	30h
Participation in classes	-
Laboratory	30h
Participation in project classes	-
Participation in seminar	-
Preparation course on e-learning	-
Test	2 h
Entrance test for laboratory classes	2 h
Project's defence	-
Exam	-
Consultation hours	10 h
<b>DIRECT TEACHING, hours/ ECTS</b>	<b>74 h / 4ECTS</b>
Preparation for tutorials	-
Preparation for laboratories	46 h
Preparation for projects	-
Preparation for seminars	-
Preparation for e-learning classes	-
Participation in e-learning classes	-
Working on project	-
Preparation for tests	20 h
Preparation for exam	-
<b>SELF-STUDY, hours/ ECTS</b>	<b>66 h / 4 ECTS</b>
<b>TOTAL (hours)</b>	<b>Σ140 h</b>
<b>TOTAL ECTS</b>	<b>4ECTS</b>

### PRIMARY AND SUPPLEMENTARY TEXTBOOKS

1. Campbell Biology, Canadian Edition, 2014 by Reece et al.
Biology (10th ed.) by P. H. Raven, G. B. Johnson, J. B. Losos, K. A. Mason and S. R. Singer. William C. Brown Publishers, 2011
Biology Laboratory Manual (10th ed.) by D. S. Vodopich and R. Moore. Wm. C. Brown Pub., 2011.
Biology 155 Laboratory Supplement by David L. Schultz, 2006.

**SUBJECT COORDINATOR (NAME, SURNAME, E-MAILADDRESS)**

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<b>Learning outcome</b>	<b>In relation to the learning outcomes specified for the field of study</b>	<b>Course objectives</b>	<b>Course content</b>	<b>Course study methods</b>	<b>Methods of assessment</b>
EK 1	K_W01, K_W02, K_W05, K_U06	C1	lecture	1	P2
EK 2	K_W01, K_W02, K_W05, K_U06	C2	lecture	1	P2
EK 3	K_U01, K_U04, K_U08, K_K01, K_U06	C3	Lab.	2	F1, F2
EK 4	K_U01, K_U04, K_U08, K_K01, K_U06	C4, C5	Lab.	2,3	F1, F2
EK 5	K_U01, K_U04, K_U08, K_K01, K_U06	C4, C5	Lab.	2,3	F1, F2

**II. OTHER USEFUL INFORMATION**

1. All the information on the class schedule is posted on the student information board and online at: [www.is.pcz.pl](http://www.is.pcz.pl)
2. The information about the consultation hours is provided to students on the first class meeting and posted online at [www.is.pcz.pl](http://www.is.pcz.pl)

The information on course completion and grade is provided to students on the first class meeting.