

Course name: CELL BIOLOGY

ECTS	3
Course status	obligatory
Course final assessment/evaluation of outcomes	exam
Prerequisites	no

Main field of study: agricultural sciences-veterinary and others related
field of study name (capital letters)

Profile of study	General-academic
The code of studies (education level)	SI/SM (bachelor/master)
Semester of studies	winter
Language of instruction	English

Course offered by: veterinary and others related

Name of faculty offering the course	Faculty of Veterinary Medicine
Name of department offering the course	Faculty of Veterinary Medicine
Course coordinator	dr hab. Małgorzata Kotula-Balak, prof. URK

Learning outcomes of the course:

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline#

KNOWLEDGE – student knows and/or understands:

BIK_W1	knows and knows the ultrastructure of cells and the relationship between structure and function	A.W1	RW
BIK_W2	knows and describes the structure, function and role of cell organelles	A.W1	RW
BIK_W3	knows and understands the function and importance of basic processes in the nucleus and cytoplasm of the cell	A.W4	RW
BIK_W4	knows the basic research techniques used in cell biology	A.W1	RW

SKILLS – student is able to:

BIK_U1	use a light microscope	A.U2	RW
BIK_U2	perform microscopic preparations using histological techniques	A.U8	RW
BIK_U3	analyze cell structures on the basis of images from a light and electron microscope	A.U8	RW
BIK_U4	actively collaborating in a group	A.U15	RW
BIK_U5	is aware of the need for continuous learning	A.U21	RW

SOCIAL COMPETENCE- student is ready to:

BIK_K1	deepening knowledge and improving skills	OK_8	RW
BIK_K2	communicating with colleagues and sharing knowledge	OK_9	RW

Teaching contents:

Lectures	15	hours
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Topics of the lectures	<p>Eukaryotic cell origin hypotheses.</p> <p>Basic features of cells. Prokaryotic and eukaryotic cells. Plant and animal cell.</p> <p>The structure of the cell nucleus: nuclear envelope, transport to and from the cytoplasm. Nucleoplasm, nuclear bodies.</p> <p>Structure and functions of the cell nucleus, DNA as a carrier of genetic information</p> <p>RNA types: mRNA, rRNA, snRNA and tRNA. Structure of the chromosome. Coding, non-coding, telomere and centromere sequences. Nucleus and the formation of ribosomes.</p> <p>Autonomous organelles (mitochondria and chloroplasts).</p> <p>Composition and function of cytoplasm.</p> <p>Cell cycle, cell division.</p> <p>Cytoskeleton: microfilaments, microtubules, intermediate filaments and nuclear lamines.</p> <p>The products of the cytoskeleton: microvilli, tails, cilia, centrioles, basal bodies.</p> <p>Cell membrane, structure and surface proteins. Intercellular junctions: desmosomes, hemidesmosomes, tight junctions, gap junctions.</p> <p>Stem cells - biological and practical importance.</p>
Accomplished learning outcomes	<i>symbols of learning outcomes for lectures BIK_1, BIK_2, BIK_3</i>
Verification methods, rules and criteria of outcome assessment	<p><i>together with participation in the final assessment (in %) The condition for taking the exam is obtaining a pass from the classes.</i></p> <p><i>Written exam in the form of a single-choice test. The exam consists of 30 questions, the maximum number of points to be obtained is 30. In order for the exam to be passed and the learning outcomes as achieved, at least 50% of correct answers are required.</i></p> <p><i>The final grade for the course is:</i></p> <ul style="list-style-type: none"> <i>- grade from the final written exam in the form of a single-choice test (lecture material - weight in the final grade 50%.</i> <i>- grade from the test covering the material from the classes, in the form of a single-choice test - weight in the final grade 50%</i> <p><i>Assessment criteria used:</i></p> <ul style="list-style-type: none"> <i>0–15 points: insufficient</i> <i>16–18 points: satisfactory</i> <i>19-21 points: a sufficient plus</i> <i>22-24 points: good</i> <i>25-27 points: a good plus</i> <i>28-30 points: very good</i>
Classes	13 hours
Topics of the classes	<p>Techniques used in cell biology: light and electron microscopy. Principles of operation of various types of microscopes.</p> <p>Histological techniques - preparation of microscopic sections from animal material (tissues and secretions).</p> <p>Cyto / histochemical staining technique, immunocytochemical technique. Antibodies and labels.</p> <p>Identification of cell organelles in preparations under the light microscope.</p> <p>Identification of cells in different phases of the cell cycle and cell organelles in microscopic preparations and electronograms.</p> <p>Techniques live staining of cells.</p>
Accomplished learning outcomes	<i>symbol of learning outcomes for the classes BIK_1, BIK_2, BIK_3, BIK_4, BIK_U1, BIK_2</i>

Verification methods, rules and criteria of outcome assessment	together with participation in the final assessment (in %) The condition for taking the exam is obtaining a pass from the classes. Written exam in the form of a single-choice test. The exam consists of 30 questions, the maximum number of points to be obtained is 30.
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Seminars	2 hours
Topics of the seminars	Individual preparation of a multimedia presentation related to the selected topic of the class module.
Accomplished learning outcomes	symbol of learning outcomes for the classes BIK_1, BIK_2, BIK_3, BIK_4, BIK_U1, BIK_U2

Verification methods, rules and criteria of outcome assessment	<p>together with participation in the final assessment (in %) the condition for taking the exam is obtaining a pass from the classes. Written exam in the form of a single-choice test. The exam consists of 30 questions, the maximum number of points to be obtained is 30. In order for the exam to be passed and the learning outcomes as achieved, at least 50% of correct answers are required. The final grade for the course is:</p> <ul style="list-style-type: none"> - grade from the final written exam in the form of a single-choice test (lecture material - weight in the final grade 50%. - grade from the test covering the material from the classes, in the form of a single-choice test - weight in the final grade 50% <p>Assessment criteria used:</p> <ul style="list-style-type: none"> 0-15 points: insufficient 16-18 points: satisfactory 19-21 points: a sufficient plus 22-24 points: good 25-27 points: a good plus 28-30 points: very good
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References:

Basic	Alberts B et al., <i>Essential Cell Biology</i>
Supplementary	English-language scientific journals (Elsevier, Springer, Wiley) available on-line

Structure of learning outcomes:

Discipline: # (provide appropriate symbol)	3.0	ECTS**
Discipline: # (provide appropriate symbol - if the course relates to more than one academic discipline)	...	ECTS**

Structure of student activities:

Contact hours	37	hours	1,5	ECTS**
including:				
lectures	15	hours		
classes and seminars	15	hours		
consultations	3	hours		
participation in research	0	hours		
mandatory traineeships	0	hours		
participation in examinations	4	hours		
e-learning	0	hours	...	ECTS**
student own work	30	hours	1,5	ECTS**

* where 10 hours of classes = 1 ECTS (in case of 15 h → 2 ECTS)

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

academic discipline code: RZ - animal science and fishery, PB - biological sciences, etc.