

Course code	Course group	Volume in ECTS credits	Course hours
BIO2011	C	6	150

<b>Course type (compulsory or optional)</b>	<b>Compulsory</b>
<b>Course level (study cycle)</b>	<b>Bachelor</b>
<b>Semester the course is delivered</b>	<b>Autumn</b>
<b>Study form (face-to-face or distant)</b>	<b>Face-to-face</b>

#### Course title in Lithuanian

**AUGALŲ IR GYVŪNŲ BIOLOGIJA**

#### Course title in English

**BIOLOGY OF PLANTS AND ANIMALS**

#### Short course annotation in Lithuanian

Dalyko tikslas - supažindinti studentus su augalų ir gyvūnų anatomicinės ir morfologinės sandaros principais: augalų ir gyvūnų ląstelių įvairovė, histologinėmis ir organografinėmis savybėmis - augalų meristeminiiais, dengiamaisiais, mechaniniais, apytakos, parenchiminiais ir sekrecijos audiniais, vegetatyvinių ir reproduktyvinių organų sandara; gyvūnų odos, atramos ir judėjimo organais, belatakių liaukų, širdies, kraujagyslių, kvėpavimo, limfoidinės, virškinimo, šlapimo ir lytinių organų sistemomis, formos ir funkcijos ryšiais; taip pat su gyvūnų fiziologijos pagrindiniais aspektais; augalų ir gyvūnų vystymosi ypatumais. Išklause kursą studentai sugebės teoriškai apibūdinti augalų ir gyvūnų morfologijos, formos ir atliekamos funkcijos sąryšį, vystymosi, gyvūnų fiziologijos pagrindinius aspektus bei praktiškai pritaikyti atitinkamus augalų ir gyvūnų biologijos tyrimo metodus.

#### Short course annotation in English

The course will cover basic knowledge of concepts of organization of body, systems of organ; biology of the plant and animal cell; tissues of the plant body: the root, the shoot, the leaf, the flower, the inflorescence, the seed, the fruit; vegetative and sexual reproduction; taxonomic evidence: structural, biochemical and molecular characters; types and functions of basic animal tissues; anatomy, physiology and development of organs of support and motion, endocrine system, heart and vascular system, organs of immune system, respiratory system, digestive system, urogenital system, skin; homeostasis, energy balance; general concepts of developmental biology, progenesis, prenatal and postnatal period; similarities and differences of development of various organisms. After finishing the course students will be able describe morphology, relationship between structure and function, development of plants and animals, animals physiology and practically apply the relevant investigation methods of plants and animals biology. Teaching methods are: lectures and laboratory works.

#### Prerequisites for entering the course

Science World GMF 0101, General Biology BIO 1001

#### Course aim

The aim of the course is to provide the basic knowledge of morphology, relationship between structure and function, development of plants and animals, animals physiology, also of the investigative methods of plants and animals biology, analysis of the data.

#### Links between course outcomes and criteria of learning achievement evaluation

Course outcomes	Criteria of learning achievement evaluation
To show concept, history, terminology, importance of understanding of biology of animals and plants	Presents basic knowledge of notion, history, terminology, importance of understanding of biology of animals and plants
Describe morphology of plants and animals	Presents main structure and functions of cells, each type of tissue, organs and systems of organs
Understand relationship between structure and function	Presents how structure of cells, tissues, organs and systems of organs is designed to perform their functions
Describe the physiology of animals	Presents basic knowledge of physiology of animals

Understand development of plants and animals	Presents basic knowledge of development of animals
Apply the relevant tests of plants and animals biology for the practical analysis	Presents the relevant tests of plants and animals biology for the practical analysis of the body structure, development of the organisms, animals physiology.

### Content (topics)

1. Biology of the Cell. Concepts of Organization of Body, Systems of Organs. Tissues of Plant Body.
2. Vegetative and Reproductive Organs of Plants.
3. Vegetative and Sexual Reproduction.
4. Taxonomic Evidence: Structural, Biochemical and Molecular Characters.
5. Concepts of Developmental Biology. Progenesis. Natural and Artificial Insemination.
6. Prenatal and Postnatal Period.
7. Tissues of Animals.
8. Organs of Support And Motion.
9. Hormonal Regulation of Organism Functions.
10. Heart and Vascular System.
11. Respiratory System.
12. Immune system.
13. Digestive System. Homeostasis. Energy Balance.
14. Urogenital System. Non-renal Excretion.
15. Skin and its Derivates.
<b>Practical work (contents):</b> The Structure of Plants cells; The Tissues of Plants; The Organs of Plants; Progenesis, Prenatal and Postnatal Periods; The Tissues of Animals; Organs of Support and Motion; Visceral Organs of Animals; The Blood Pressure; The Ration; The Properties of the Urine.

### Distribution of workload for students (contact and independent work hours)

Lectures – 45 hours, laboratory work – 30 hours, individual work – 69,5 hours, consultations, and exam – 5,5 hours. Total 150 h.
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### Structure of cumulative score and value of its constituent parts

Final assessment sums the assessments of written final examination (50%), written mid-term examination (17%) and assessment of laboratory works (33%).
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### Recommended reference materials

No.	Publication year	Authors of publication and title	Publishing house	Number of copies in		
				University library	Self-study rooms	Other libraries
<i>Basic materials</i>						
1.	2003	Abraitis R. ir kt. Žmogaus fiziologija (Human Physiology)	KMU leidykla	3		
2.	2009	Batiuškaitė D. ir Kupčinskienė E. Augalų anatomija ir morfologija (Plant Anatomy and Morphology)	VDU leidykla	25		
3.	2008	Česnys G. ir kt. Žmogaus anatomija, 1 t. (Human Anatomy)	VU leidykla	35		
4.	1985	Dagys J. Augalų anatomija ir morfologija (Plant Anatomy and Morphology)	Mokslas	1		
5.	1984	Galiniš V. Aukštesniųjų augalų sistematika (Systematics of Higher Plant)	Mokslas	3		

6.	2004	Hill, R. W. et. al. Animal physiology	Sinauer Associates, Inc	1		
7.	2003	Jukonienė I. Lietuvos kiminai ir žaliosios samanos (Sphagnum and Green Moss of Lithuania)	Botanikos instituto leidykla	1		
8.	2008	Judd W.S. et al. Plant Systematics. A Phylogenetic Approach, 3 <sup>rd</sup> ed.	Sinauer Associates	2		
9.	2009	Naujalis J.R. ir kt. Botanikos praktikos darbai. Archegoniniai ir žiediniai augalai (Practicals works of Botany. Cryptogams and Phanerogams)	Vilniaus universiteto leidykla	5		
10.	2005	Padaiga A. ir kt. Naminių gyvūnų mikroskopinė anatomija (Microscopic Anatomy of Domestic Animals)	LVA leidykla	10		
11.	2005	Raven P.H. et al. Biology of Plants	W.H. Freeman and Company Publishers	1		
12.	2008	Stropus R. ir kt. Žmogaus anatomija, 2 t. (Human Anatomy)	KMU leidykla	32		
13.	2003	Vitkus A. ir kt. Žmogaus histologija (Human Histology)	KMU leidykla	30		
<b>Supplementary materials</b>						
1.	2010	Beck Ch. B. An Introduction to Plant Structure and development: Plant Anatomy for the Twenty-First Century	Cambridge University Press			
2.	2008	Boron W.F., Boulpaep E. Medical Physiology	W B Saunders Co			
3.	2009	Carlson Bruce M. Human embryology and developmental biology, 4 <sup>th</sup> ed.	Elsevier Mosby			
4.	1990	Fahn A. Plant Anatomy , 4 <sup>th</sup> ed.	Oxford, Pergamon Press			
5.	2006	Gilbert S.F. Developmental Biology. 8 <sup>th</sup> ed.	Sunderland, Massachusetts: Sinauer Associates, Inc,			
6.	2007	Seeley R. R., et. al. Anatomy and Physiology	McGraw-Hill Companies			
7.	2006	Saladin K. Anatomy & Physiology: The Unity of Form and Function	McGraw-Hill College			
8.	2010	<b>Singh G. Plant Systematics, 3rd ed.: An Intergrated Approach</b>	Science Publishers			

9.	2006	Terry R. M. Human Anatomy & Physiology: Laboratory Manual Fetal Pig Dissection	McGraw-Hill Higher Education
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**Course programme designed by**

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