UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	SPLOŠNA BIOLOGIJA
Course Title:	GENERAL BIOLOGY

Študijski program in stopnja Study Programme and Level	Študijska smer Study Field	Letnik Academic Year	Semester Semester
UN Biokemija, 1. stopnja	**/**	**1.**	**1.**
USP Biochemistry, 1st Cycle	**/**	**1st**	**1st**

Vrsta predmeta / Course Type: obvezni / Mandatory

Univerzitetna koda predmeta / University Course Code: BK105

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
40	**15**	**20 LV**	**/**	**/**	**75**	**5**

Nosilec predmeta / Lecturer: doc. dr. Nada Žnidaršič / Dr. Nada Žnidaršič, Assistant Professor

Jeziki / Languages:

Predavanja / Lectures:	**slovenski / Slovenian**
Vaje / Tutorial:	**slovenski / Slovenian**

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Študent oz. kandidat mora imeti predmet opredeljen kot študijsko obveznost.	The course has to be assigned to the student.

Vsebina:	**Content (Syllabus outline):**
Uvod v biologijo: osnovne značilnosti živih organizmov. Zgradba pro- in evkariontske celice. (rastline, glive, živali). Celična ultrastruktura in funkcija. **Tkiva in organi večceličarjev:** interakcije celic in nastanek tkiv. Rastlinska in živalska tkiva. Zgradba in delovanje organov modelnih organizmov. **Osnovni mehanizmi razmnoževanja, razvoja in rasti:** razmnoževanje rastlin in živali; meristemi- organizacija rasti rastlin; osnovni genetski koncepti povezani s spolnostjo. **Organizmi in okolje:** interakcije mikroorganizmov, rastlin in živali med seboj in z okoljem ter antropogeni vplivi na okolje.	**Introduction to biology:** Main characteristics of living organisms. Structure of prokaryotic and eukaryotic cell (animal, plant and fungi) Cell ultrastructure and function. **Tissues and organs of multicellular organisms:** Cell interactions and formation of tissues. Types of animal and plant tissues. Structure and function of organs in model organisms. **Basic mechanisms of organism reproduction, growth and development:** Reproduction in plants and animals; Organisation of plant growth – meristems; basic genetic concepts related to sexuality. **Organism and environment:** Interactions of microorganisms, plants and animals with

	environment and anthropogenic influences.

Temeljna literatura in viri / Readings:

- ŠTRUS J. (2002). Splošna zoologija. Učbenik splošne zoologije za študente biologije. ŠOU, Ljubljana. 1. ponatis 2002
- MINKOFF E.C. (2004). Biology Today. An issues approach. Third Edition. Garland Science Publishing. ISBN: 0815341571 (gradiva za seminarje)I
- Dermastia M. (2007). Pogled v rastline. NIB. ISBN 978-961-90363-7-2
- Campbell, N.A, J.B. Reece, E.J. Simon (2007). Essential biology with physiology (2nd Edition). Pearson International Edition, San Francisco, CA 94111, ISBN 0-321-48649-8
- Nature Principles of Biology Interactive Textbook: http://www.nature.com/principles (gradiva za seminarje)

Cilji in kompetence:	**Objectives and Competences:**
Cilj predmeta je poznavanje osnovnih zakonitosti življenja, načel in pojmov v biologiji. Študent spozna osnovne značilnosti živih sistemov, zgradbo in delovanje celic, tkiv, organov in povezovanje v organizem. Spozna enotnost in raznolikost živega sveta, interakcije med organizmi in njihovo povezanost z neživim svetom. Študent pridobi osnovne spretnosti za delo z organizmi in se seznani z osnovnimi metodami dela v biologiji. Spoznava strokovno terminologijo in je zmožen iskati in uporabljati ustrezne vire za pridobivanje in poglabljanje biološkega znanja. Na osnovi poznavanja zgradbe je študent zmožen primerjati in razložiti delovanje različnih organizmov.	Students will get basic knowledge on structure and dynamics of animal and plant cells, tissues and organs. Students get practical skills in light microscopy and methods of samples preparation. They will understand the importance of cell biology and histology in research and applications in diagnostics and industry, understand the importance of cell and tissue cultures in research and applications. They will be able to use and combine different informational sources. Students will understand basic concepts and principles in biology. They become familiar with structure of main organic systems in animals and plants and can interpret their function. They get insight into inheritance, reproductive and developmental processes of animals and plants and master basic concepts in ecology. The students get basic on animal reproduction and development and are able to link different levels of biological organization.

Predvideni študijski rezultati:	**Intended Learning Outcomes:**
<u>Znanje in razumevanje</u> Razumevanje osnovnih bioloških procesov, ki vzdržujejo življenje. Poznavanje zgradbe in delovanja celic enoceličnih organizmov ter celic, tkiv in organov večceličnih organizmov. Poznavanje osnovne zgradbe in delovanja človeškega organizma.	<u>Knowledge and Comprehension</u> Basic knowledge on animal cell and tissue structure and understanding of basic biological concepts and principles of life. Understanding interactions between organisms and their environment. The significance of maintenance of biological diversity and nature conservation.

Razumevanje interakcij med organizmi in okoljem ter poznavanje vplivov na okolje. Razumevanje pomena raznolikosti živih bitij za ohranjanje naravnega okolja.	
Uporaba Razlikovanje različnih tipov celic in tkiv. Vzdrževanje celic in tkiv v kulturi. Zmožnost uporabe metod za ločevanje, analizo in identifikacijo celic in tkiv. Poznavanje biologije osnovnih skupin rastlin in živali in njihove povezanosti. Poznavanje zgradbe in delovanja človeškega organizma, ki je osnova za razumevanje bolezenskih procesov. Zmožnost uporabe strokovne terminologije.	Application Preparation of animal and plant cell and tissue samples for microscopy. Differentiation between different animal cell and tissue types. Knowledge of biology of different organisms and their interactions. Identification of basic animal types and their reproductive and developmental stages. Biology of different animal groups and their role in different environments. Learning and usage of biological terminology.
Refleksija Na osnovi pridobljenih znanj o zgradbi in delovanju modelnih organizmov bo študent zmožen primerjati različne tipe organizmov in interpretirati njihove značilnosti ter medsebojno povezanost. Študent bo razumel osnovne genetske mehanizme in pomen spolnega razmnoževanja za raznolikost živih bitij. Spoznal bo občutljivost okolja za antropogene vplive in znal predvideti škodljive posledice.	Analysis Understanding and comparing life at cellular and tissue levels; interpretation of cell structure of different organic systems in lower and higher animals and plants. Basic reproductive mechanisms and significance of sexuality for biodiversity. Understanding the sensitivity of the environment for anthropogenic influences and prediction of possible harmful effects.
Prenosljive spretnosti Študent bo obvladal osnovne tehnike priprave bioloških preparatov za opazovanje zgradbe z različnimi tipi mikroskopov. Znal bo določiti osnovne tipe rastlinskih in živalskih organizmov. Poznal bo osnovno anatomijo človeka.	Skill-transference Ability Preparation of animal tissues for microscopy, observations by light microscopy, imaging and documenting histological samples, interpretation of cell ultrastructure, histology and organ structure in animals and plants; preparation of reports and proper use of literature and biological terminology.

Metode poučevanja in učenja:	**Learning and Teaching Methods:**
Predavanja, laboratorijske vaje, seminarji kot skupinsko in problemsko zasnovano delo. Študent pridobi praktične izkušnje pri laboratorijskem delu in jih dopolni s teoretičnim znanjem pri predavanjih in skupinsko predstavitvijo seminarjev iz aktualnih bioloških tem povezanih s teoretičnimi znanji pri predmetu. Znanje nadgrajuje s samostojnim študijem in z	Lectures, practical courses, seminars as team work and project based learning. Prevailing experience during practical work is upgraded by theoretical basis from lectures and presentation of seminars based on up-to date topics in biology. Upgrading knowledge in biology through individual student work using different study and information sources.

uporabo ustreznih študijskih in informacijskih virov.	

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Opravljene vaje so pogoj za pristop k izpitu. Kolokvij iz laboratorijskih vaj 10 % Seminarska naloga 30 % Pisni izpit 60 % Ocene: pozitivno 6-10; negativno 1-5.	 **30 %** **10 %** **60 %**	Practical work is prerequisite for written exam. Colloquium from practical work Seminar Written exam Grades: passed:6-10, failed 1-5

Reference nosilca / Lecturer's references:

ADEN, Saša, KOZOROG, Mirijam, ŠVIGELJ, Tomaž, POKLAR ULRIH, Nataša, ŽNIDARŠIČ, Nada, PODOBNIK, Marjetka, ANDERLUH, Gregor. Cholesterol enriched archaeosomes as a molecular system for studying interactions of cholesterol-dependent cytolysins with membranes. The journal of membrane biology, ISSN 0022-2631, 2018, vol. 251, iss. 3, str. 491-505, ilustr., doi: 10.1007/s00232-018-0018-y. [COBISS.SI-ID 4885880

BOGATAJ, Urban, MRAK, Polona, ŠTRUS, Jasna, ŽNIDARŠIČ, Nada. Ultrastructural differentiation of plasma membrane and cell junctions in the hindgut cells is synchronized with key developmental transitions in Porcellio scaber. Arthropod structure & development, ISSN 1467-8039, 2019, vol. 50, str. 78-93, ilustr., doi: 10.1016/j.asd.2019.04.004. [COBISS.SI-ID 5071439]

ŽNIDARŠIČ, Nada, MRAK, Polona, RAJH, Eva, ŽAGAR, Kristina, ČEH, Miran, ŠTRUS, Jasna. Cuticle matrix imaging by histochemistry, fluorescence, and electron microscopy. Resolution & discovery : new beacon for the microscopy community, ISSN 2498-8707, 2018, 8 str., [in press].https://akademiai.com/doi/abs/10.1556/2051.2017.00045, doi: 10.1556/2051.2018.00052. [COBISS.SI-ID 4679503]