Univerza v Mariboru
Medicinska fakulteta

UČNI NAČRT PREDMETA / COURSE SYLLABUS			
Ime predmeta:	**Biomedicinska Informatika**		
Course title:	**Biomedical Informatics**		
Študijski program in stopnja Study programme and cycle	**Študijska smer Study option**	**Letnik Year of study**	**Semester Semester**
Biomedicinska tehnologija/3. stopnja		**1**	**1 ali 2**
Biomedical Technology/3rd Degree			

Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)	Obvezni Compulsory
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	**Seminar Seminar**	**Vaje Tutorial**			**Klinične vaje Clinical training**	**Druge oblike študija Other forms of study**	**Samost. delo Individual work**	**ECTS**
		15						
20	**40**	**AV**	**LV**	**RV**			**195**	**9**

Nosilec predmeta / Course coordinator:	Prof. dr. Dejan Dinevski

Jeziki /Languages:	**Predavanja / Lectures:**	Slovensko/Slovene
	Vaje / Tutorial:	Slovensko/Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites for enrolling in the course or for performing study obligations:**

Vsebina (kratek pregled učnega načrta):	**Content (syllabus outline):**
Računalništvo in informacijske tehnologije	Computer science and information technology
Medicinska informatika	Medical informatics
Podatkovne zbirke: vrste in namen, podatkovno modeliranje, podatkovno rudarjenje relacijske zbirke, bibliografske zbirke	Databases: types and purpose, data modeling, data mining, relational databases, bibliographic databases
Informacijska omrežja: topologije, gradniki, internetne storitve, intranet	Information networks, topology, internet services, intranet
Uporaba slik in grafike v medicini	Pictures and graphics in medicine
Odločitveni sistemi v medicini	Decision support systems in medicine
Inteligentni sistemi v medicini	Intelligent systems in medicine
Bioinformatika	Bioinformatics
Napredno iskanje strokovnih in bibliografskih informacij s področja medicine	Advanced search methods of medical and bibliographic data
biomedicinska tehnologija v kliničnih procesih	biomedical technology in clinical settings
simulatorji in simulacije v medicini	simulators and simulations in medicine
Osnove telemedicinske tehnologije, telezdravstvo, telenega, telenadzor, telekonzultacije	Basics of telemedicine technology, telehealth, telecare, telemonitoring, teleconsultations

Pregled telemedicinske prakse (teledermatologija, telekirurgija, telepatologija, telekardiologija…) Tehnologija v diagnostiki in tehnologija v terapiji. Neinvazivna in invazivna tehnologija. Monitoring organskih sistemov obtočil in dihal. Medicinski pripomočki v reanimaciji in intenzivnem zdravljenju.	Overview of telemedicine practice (teledermatology, telesurgery, telepathology, telecardiology…) Technology for diagnostic and technology for therapy. Non-invasive and invasive technology. Haemodynamic and respiratory monitoring. Medical devices in resuscitation and in intensive care.
Temeljni literatura in viri / Reading materials:	
– Peter Lee, Carey Goldberg, Isaac Kohane. »The AI Revolution in Medicine: GPT-4 and Beyond«. Pearson, 2023, ISBN 9780138200145 – Edward H. Shortliffe, James J. Cimino: Biomedical Informatics, Springer USA, 2006 – Bashshur RL, Shannon GW, History of Telemedicine –Evolution, Context and Transformation, Mary Ann Liebert publishers, New York, 2009. – Chaudhary, A., & Islam, S. (2023). Computational Health Informatics for Biomedical Applications (1st ed.). Apple Academic Press. Retrieved from https://www.perlego.com/book/4140444/computational-health-informatics-for-biomedical-applications-pdf (Original work published 2023) –	
Cilji in kompetence:	**Objectives and competences:**
Študent bo spoznal biomedicinsko in informacijsko tehnologijo ter aplikacije na področju medicine. Na podlagi osnov se bo poglobil v nekatera specialnima področja odločitvenih in inteligentnih sistemov ter bioinformatike. Specialna področja bodo študentje usvojili predvsem s raziskovalnimi seminarskimi nalogami. To znanje bo študent lahko uporabljal pri raziskovalnem in praktičnem reševanju medicinskih problemov	Students will learn about biomedical and information technology/application in medicine. Special attention will be focused to decision support and intelligent systems and also bioinformatics. Advanced subjects will be studied through research assignments. The gained knowledge will be used by research and practical problem solving.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Znanje in razumevanje bioinformacijskih tehnologij s katerimi bo študent sposoben bolj učinkovito reševati raznovrstne medicinske probleme. Prenesljive/ključne spretnosti in drugi atributi: - programiranje in delo z računalnikom - poznavanje računalniško podprte biomedicinske tehnologije - poznavanje simulatorjev in simulacij v medicini sposobnost napredne analize in razumevanja podatkov.	**Knowledge and understanding:** Knowledge and Understanding of bioinformatics technologies in more efficient solving of various medical problems Transferable/Key Skills and other attributes: - programming and computer skills - knowledge about computer supported biomedical technology - knowledge about medical simulators and simulations the ability to perform complex data analysis
Prenosljive/ključne spretnosti in drugi atributi:	**Transferable/key competences and other abilities:**

Metode poučevanja in učenja:	Learning and teaching methods:
Predavanja Seminar Vaje, e-izobraževanje	Lectures Seminar Exercises, e-learning

Načini ocenjevanja:	Delež (v %) / Share (in %)	Assessment methods:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
Seminarska naloga	30 %	Seminar paper
Pisni izpit	50 %	Written exam
Ustni izpit	20 %	Oral exam

Reference nosilca / Course coordinator's references:

Prof. dr. Dejan Dinevski:

BIZJAK, Mojca (avtor, korespondenčni avtor), ADAMIČ, Katja, BAJROVIĆ, Nisera, ERŽEN, Renato, JOŠT, Maja, KOPAČ, Peter, KOŠNIK, Mitja, LALEK, Nika, ZIDARN, Mihaela, DINEVSKI, Dejan. Patch testing with the European baseline series and 10 added allergens : single centre study of 748 patients. Contact dermatitis. [Online ed.]. 2022, vol. 87, str. [1-21], tabeli. ISSN 1600-0536. https://onlinelibrary.wiley.com/doi/epdf/10.1111/cod.14178, DOI: 10.1111/cod.14178. [COBISS.SI-ID 112721411], [JCR, SNIP, WoS, Scopus], kategorija: 1A1 (Z, A', A1/2); uvrstitev: SCIE, Scopus, MBP (BIOABS, BIOPREW, CAB, MEDLINE, PUBMED); tip dela še ni verificiran, točke: 14.04, št. avtorjev: 10

DINEVSKI, Dejan, LUČOVNIK, Miha, ŽEBELJAN, Ivan, GUZELJ, Domen, VESENJAK DINEVSKI, Izidora, SALON, Adam, DE BOEVER, Patrick, GOSWAMI, Nandu. Analysis of retinal blood vessel diameters in pregnant women practicing yoga: a feasibility study. Healthcare. 2022, vol.10, iss.7, str. 1-6, ilustr. ISSN 2227-9032. https://www.mdpi.com/2227-9032/10/7/1356, DOI: 10.3390/healthcare10071356. [COBISS.SI-ID 122660611], [JCR, SNIP, WoS, Scopus] kategorija: 1A2 (Z, A', A1/2); uvrstitev: SSCI, SCIE, Scopus, MBP (PUBMED, DOAJ); tip dela je verificiral OSICM točke: 10.88, št. avtorjev: 8

LUČOVNIK, Miha, LACKNER, Helmut Karl, ŽEBELJAN, Ivan, MÖRTL, Manfred Georg, VESENJAK DINEVSKI, Izidora, MAHLMANN, Adrian, DINEVSKI, Dejan. Effect of prenatal yoga versus moderate-intensity walking on cardiorespiratory adaptation to acute psychological stress: insights from non-invasive beat-to-beat monitoring. Sensors. 2024, vol. 24, iss. 5, str. 1-10. ISSN 1424-8220. https://www.mdpi.com/1424-8220/24/5/1596, DOI: 10.3390/s24051596. [COBISS.SI-ID 187795971], [JCR, SNIP]
financer: UKC MB, IRP-2019/01-12; ARIS, P3-0036, SI, Bio-psiho-socialni model kvalitete življenja
kategorija: 1A2 (Z, A1/2); uvrstitev: SCIE, Scopus, MBP (ASFA, CAB, COMPENDEX, DOAJ, INSPEC, MEDLINE, METADEX, PUBMED); tip dela še ni verificiran
točke: 13.75, št. avtorjev: 7