2025/2026

Univerza v Mariboru
Medicinska fakulteta

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION	
Predmet:	**Sodobna biomedicinska informatika**
Subject Title:	**Contemporary Biomedical Informatics**

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
Dentalna medicina/Dental Medicine 2 stopnja/2nd cycle		**2, 5**	**3., 9.**

Vrsta predmeta / Course type Izbirni predmet/Elective

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
5	**40**				**45**	**3**

Nosilec predmeta / Lecturer: **Red. prof. dr. Dejan Dinevski**

Jeziki / Languages: **Predavanja / Lecture:** slovenščina/slovene
Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisits:

Vsebina:

- Definiranje informacijskih procesov obravnave in oskrbe pacienta v zdravstvenih institucijah
- Signali, slike in video v medicini, informacijska predstavitev dvodimenzionalnih in 3D struktur
- Biomedicinska informatika in klinična informatika: osnove, namen, področja uporabe v medicini in raziskovanju
- Telemedicina; zgodovina, tehnologije telemedicine, praktične aplikacije telemedicine (telekonzultacije, medicinska obravnava na daljavo, nega na daljavo, nadzor bolnika na daljavo) dokazane prednosti na posameznih področjih telemedicine
- Odločitveni sistemi v medicini; proces odločanja, vrste odločitvenih sistemov, faktorji uspešnosti kliničnih odločitvenih sistemov
- Inteligentni sistemi v medicini; ekspertni sistemi, podatkovno rudarjenje, nevronske mreže, globoko učenje.

Content (Syllabus outline):

- Information processes definition in the field of medical treatment and care in health institutions
- Signals, graphics and video in medicine, information formats of 2D and 3D entities
- Biomedical informatics, clinical informatics: basics, purpose, application fields in medicine and research work.
- Telemedicine; history, telemedicine technologies, applications of telemedicine in medical practice (teleconsultations, tele-medical treatment, telecare) evidence based advantages of telemedicine in particular medical areas.
- Decision support systems in medicine; decision process, structuring the decision support systems, success factors of clinical decision support systems
- Intelligent systems in medicine; expert systems, data mining, neural networks, deep learning

Temeljna literatura in viri / Textbooks:

Obvezna literatura:

1. Edward H. Shortliffe, James J. Cimino: Biomedical Informatics**,** Springer USA, 2006

Dopolnilna literatura:

1. Graschew G and Roelofs TA, Advances in Telemedicine: Technologies, Enabling Factors and Scenarios, InTech Open Publishing 2011; chapter: Dejan Dinevski et al., Video Communication in Telemedicine

2. Graschew G and Rakowsky S, Telemedicine Techniques and Applications: InTech Open Publishing 2011; chapter: Dejan Dinevski et al., Clinical Decision Support Systems
3. Holzinger A: Biomedical informatics, Medical University Graz, Published by BoD, Germany, 2012
4. R.L. Bashsur, G.W. Shannon, History of Telemedicine, Mary Ann Liebert, 2009

Cilji:

Študent se bo na podlagi osnovnih znanj poglobil v nekatera od naštetih poglavij biomedicinske informatike z namenom globljega razumevanja in obvladovanja le-teh.

Objectives:

The student will deepen the knowledge of the selections of listed biomedical informatics chapters in order to better understand and be able to utilize the acquired knowledge.

Predvideni študijski rezultati:

Znanje in razumevanje:
Po zaključku tega predmeta bo študent:
- Razumel in poznal področja biomedicinske informatike in telemedicine.
- Znal uporabljati določene aplikacije iz naštetih področij.

Prenosljive/ključne spretnosti in drugi atributi:
- Samostojno delo z računalnikom
- Uporaba računalniških programov in informacijske tehnologije
- Sposobnost iskanja podatkov

Intended learning outcomes:

Knowledge and Understanding:
On the completition of this course the student will:
- Understand and be acquainted with the basics of biomedical informatics and telemedicine.
- Be able to use the applications from the listed chapters.

Transferable/Key Skills and other attributes:
- Autonomous work with the computer
- Use of computer applications and information technology
- Ability to search for the information

Metode poučevanja in učenja:

Predavanja
Seminar

Learning and teaching methods:

Lectures
Seminars

Načini ocenjevanja:	**Delež (v %) / Weight (in %)**	**Assessment:**
Način (ustno izpraševanje, projekt) – Seminar – Kolokvij ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV: Izdelava seminarske naloge v obliki strokovnega članka in njena predstavitev pred kolegi. POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA: Opravljen seminar	**50 %** **50 %**	Type (oral examination, project): – Seminar – Partial exam ACADEMIC OBLIGATIONS OF STUDENTS: Formation of a coursework assignment in the form of a technical article and its presentation in front of colleagues. REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING: completed coursework

Reference nosilca / Lecturer's references:

BIZJAK, Mojca, KOŠNIK, Mitja, TERHORST, Dorothea, DINEVSKI, Dejan, MAURER, Marcus. Cold agglutinins and cryoglobulins associate with clinical and laboratory parameters of cold urticaria. *Frontiers in immunology*. 29 Apr. 2021, [vol.] 12, str. 1-9, ilustr. ISSN 1664-3224.

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.

ŽEBELJAN, Ivan, LUČOVNIK, Miha, DINEVSKI, Dejan, LACKNER, Helmut Karl, MÖRTL, Manfred Georg, VESENJAK DINEVSKI, Izidora, MUJEZINOVIĆ, Faris. Effect of prenatal yoga on heart rate variability and cardio-respiratory synchronization: a prospective cohort study. *Journal of clinical medicine*. 2022, vol. 11, issue 19, str. [1]-10, ilustr. ISSN 2077-0383.