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 in 5**	**3 ali 4; 9 ali 10**

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:

DINEVSKI, Dejan, MERTIK, Matej, KOKOL, Peter. Diagnosing mitral valve prolapse by improving the predictive power of classifiers. Journal of international medical research, ISSN 0300-0605, 2011, vol. 39, no. 3, str. 1075-1083. [COBISS.SI-ID 512130104]
HRISTOVSKI, Dimitar, DINEVSKI, Dejan, KASTRIN, Andrej, RINDFLESCH, Thomas C. Biomedical question answering using semantic relations.BMC bioinformatics, ISSN 1471-2105, 2015, vol. 16, no. 6, 14 str., doi: 10.1186/s12859-014-0365-3. [COBISS.SI-ID 2048297218]
VINKO, Matej, BRECELJ, Špela, ERŽEN, Ivan, DINEVSKI, Dejan. Sprejemanje in uporaba informacijskih tehnologij v slovenskem javnem zdravstvu : nacionalna raziskava z uporabo modela UTAUT = Acceptance and use of health information technology in Slovenian public health institutions : a national survey based on UTAUT model. Zdravniški vestnik, ISSN 1318-0347. [Tiskana izd.], apr. 2013, letn. 82, št. 4, str. 234-242. [COBISS.SI-ID 2888677]
DINEVSKI, Dejan, POVALEJ, Petra, KRAVOS, Matej. Intelligent data analysis for the diagnosis of alcohol dependence syndrome. Journal of international medical research, ISSN 0300-0605, 2011, vol. 39, no. 3, str. 988-1000. [COBISS.SI-ID 512129848]