


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 /
Predavanja / Lecture: slovenščina/slovene

Languages:
Vaje / Tutorial:
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:
Prerequisites:
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:

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

Dopolnilna literatura:

- 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. Grasczew 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. Bashur, 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 completion 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:
<p>Način (ustno izpraševanje, projekt)</p> <ul style="list-style-type: none"> - Seminar - Kolokvij <p>ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV: Izdelava seminarske naloge v obliki strokovnega članka in njena predstavitev pred kolegi.</p> <p>POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA: Opravljen seminar</p>	<p>50 %</p> <p>50 %</p>	<p>Type (oral examination, project):</p> <ul style="list-style-type: none"> - Seminar - Partial exam <p>ACADEMIC OBLIGATIONS OF STUDENTS: Formation of a coursework assignment in the form of a technical article and its presentation in front of colleagues.</p> <p>REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING: completed coursework</p>

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]