



Univerza v Mariboru
University of Maribor

Medicinska fakulteta
Faculty of Medicine



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Teorija sistemov
Subject Title:	System Theory

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Biomedicinska tehnologija		2	3 ali 4

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Lab. work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
15	30				105	5

Nosilec predmeta / Lecturer:

Prof. dr. Rajko Svečko

Jeziki /

Predavanja / Lecture: Slovensko, angleško (po želji)

Languages:

Vaje / Tutorial: Slovensko, angleško (po želji)

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

Prerequisites:

Kandidat mora doseči 300 ECTS na predhodnem študiju.

Graduate degree 300 ECTS

Vsebina:

Contents (Syllabus outline):

Teorija sistemov, pregled teorij,
Modeliranje in simulacija v medicini,
Deterministični modeli, Stohastični modeli
Robotika, Kibernetika
Inteligentni sistemi, Sistemi na osnovi baze znanj,
Ekspertni sistemi, Diagnostika,
Mehke teorije in reševanje problemov, Nevronske mreže, Genetski algoritmi

Introduction in systems theory, survey,
Modelling and Simulation in Medicine, Deterministic and Stochastic Models
Robotics and Cybernetics
Intelligent Systems, Knowledge-Based Systems, Expert systems, Diagnostics
Fuzzy Systems and Soft-computing, Neural Networks, Genetic algorithms

Temeljni študijski viri / Textbooks:

1. Laszlo, Ervin: The Systems View of the World: A Holistic Vision for Our Time (Advances in Systems Theory, Complexity, and the Human Sciences)
2. Baura, Gail: System Theory and Practical Applications of Biomedical Signals
3. Gupta Madan: Intelligent Control Systems
4. Other Linkins, D. A.: Intelligent Control in Biomedicine
5. Nicolini, C.: Modeling and Analysis in Biomedicine
6. Hoppensteadt, Frank C.; Joint Author: Peskin, Charles S.: Modeling And Simulation In Medicine And The Life Sciences
6. Svečko, Rajko: Teorija sistemov

Cilji:

Objectives:

Zadnji dosežki v teoriji sistemov, raziskovalno delo na tem področju, znanja in spretnosti pri sistemskem reševanju problemov.

Last achievements in system theory, encourage research in field of the medical telematics, knowledge and skills to system problem solving.

Predvideni študijski rezultati:

Intended learning outcomes:

razumevanje in znanja teorije sistemov
Študent pridobi znanja in spretnosti pri sistemskem reševanju problemov

understanding and knowledge of system theory
Student gets knowledge and skills at system rescuing of problems

Prenosljive/ključne spretnosti in drugi atributi: spodobnost uporabe sodobnih tehnologij pri izvajanju svojega dela, razvoj in raziskave novih metod spremljanja bolezni pacientov		Transferable/Key Skills and other attributes: to be skilled for use of new, modern technologies in their primary (basic) work, development and research of new methods for disease and hospitalization tracking	
Metode poučevanja in učenja:		Learning and teaching methods:	
predavanja, projektno delo		lecture, project work	
Načini ocenjevanja:		Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):	
seminarska naloga, ustni zagovor		coursework, oral defense	
Materialni pogoji za izvedbo predmeta :		Material conditions for subject realization	
UM-FERI, Laboratorij za sisteme in vodenje razpolaga z večino osnovnih sredstev potrebnih za izvedbo predmeta.		UM-FERI, Laboratory of Control and Systems have the most part of basic equipment for education as well as for research.	
Obveznosti študentov:		Students' commitments:	
(pisni, ustni izpit, naloge, projekti)		(written, oral examination, coursework, projects):	
projekt		project	