

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet: Seminar iz biomedicinske tehnike
Course title: Seminar: Biomedical Engineering

Študijski programi in stopnja	Študijska smer	Letnik	Semestri
Elektrotehnika, druga stopnja, magistrski	Biomedicinska tehnika (smer)	2. letnik	Zimski

Univerzitetna koda predmeta/University course code: 64282

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
15		60			75	6

Nosilec predmeta/Lecturer: Damijan Miklavčič, Žiga Špiclin

Vrsta predmeta/Course type: Obvezni-strokovni /Compulsory professional

Jeziki/Languages:

Predavanja/Lectures:	Slovenščina
Vaje/Tutorial:	Slovenščina

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

Prerequisites:

Vpis v letnik predmeta	Enrolment in the year of the course
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Vsebina:

Identifikacija realnega problema s področja biomedicinske tehnike, izbor problema in reševanje. Zbiranje informacij in pregled dosedanjih rešitev izbranega ali podobnega problema. Predlog možnih rešitev in ocena različnih rešitev. Izvedba rešitve problema. Izdelava poročila.

Content (Syllabus outline):

Brief introduction to different topics and problems in Biomedical Engineering; selecting a research problem from the list of problems. Guided and supervised progression through various steps of the research project: problem study, literature overview, study of existing solutions, and proposal of novel solutions. The students will report in a written and oral form after each step.

Temeljna literatura in viri/Readings:

1. Wolfgang Birkfellner. Applied Medical Image Processing, Second Edition: A Basic Course. CRC Press; 2 edition, 2014.
2. Klaus D. Tonnies. Guide to Medical Image Analysis: Methods and Algorithms. Springer, 201.
3. Thomas M. Deserno. Biomedical Image Processing. Springer, 2011.
4. Joseph D. Bronzino. The Biomedical Engineering Handbook. CRC Press, 2000.
5. John Enderle, Joseph Bronzino. Introduction to Biomedical Engineering. Academic Press, 2012.

Cilji in kompetence:

Priprava na samostojno razvojno delo pri diplomski nalogi.

Objectives and competences:

To prepare the students for independent research that will be required for completing the MS Thesis.

Predvideni študijski rezultati:

Po uspešno opravljenem modulu naj bi bili študenti zmožni:

- razumeti potek in osnovne faze raziskovalnega dela,
- preučiti in razumeti raziskovalni problem,

Intended learning outcomes:

After successful completion of the course, students should be able to:

- understand the process and different phases of research work

• poiskati, pregledati in analizirati relevantno znanstveno literaturo, • izbrati in kritično vrednotiti znane rešitve, • predlagati izvirno rešitev problema in • predstaviti problem in rešitev ustno in v obliki pisnega poročila.	• study and understand a research problem, • search, review and analyze relevant literature , • select and evaluate stateof-the-art solutions, • proposal a novel solutions, and • master oral and written reporting of the problems and solutions.
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Metode poučevanja in učenja:

Predavanje, mentorsko delo, samostojno delo.

Learning and teaching methods:

Teaching, individual supervision, independent work.

Načini ocenjevanja:
Delež/Weight
Assessment:

Vmesna poročila in predstavitev Končno pisno poročilo in predstavitev		Intermediate reports and presentations Final written report and presentation
Vmesna poročila in predstavitev	30,00 %	Intermediate reports and presentations
Končno pisno poročilo in predstavitev	70,00 %	Final written report and presentation

Reference nosilca/Lecturer's references:

1. GALIMZIANOVA, Alfiia, PERNUŠ, Franjo, LIKAR, Boštjan, ŠPICLIN, Žiga. Stratified mixture modeling for segmentation of white-matter lesions in brain MR images. *NeuroImage*, 2016, vol. 124, pt. A, str. 1031-1043.
2. MITROVIĆ, Uroš, PERNUŠ, Franjo, LIKAR, Boštjan, ŠPICLIN, Žiga. Simultaneous 3D-2D image registration and C-arm calibration : application to endovascular image-guided interventions. *Medical physics*, 2015, vol. 42, no. 11, str. 6433-6448.
3. JERMAN, Tim, PERNUŠ, Franjo, LIKAR, Boštjan, ŠPICLIN, Žiga. Blob enhancement and visualization for improved intracranial aneurysm detection. *IEEE Tr Visualization and Computer Graphics*, 2016, vol. 22, no. 6, str. 1705-1717.
4. MIKLAVČIČ, Damijan, MALI, Barbara, KOS, Bor, HELLER, Richard, SERŠA, Gregor. Electrochemotherapy: from the drawing board into medical practice. *BioMedical engineering online*, 2014, vol. 13, no. 29.
5. HABERL MEGLIČ, Saša, MIKLAVČIČ, Damijan, SERŠA, Gregor, FREY, Wolfgang, RUBINSKY, Boris. Cell membrane electroporation. Part 2, The applications. *IEEE electrical insulation magazine*, 2013, vol. 29, no. 1, str. 29-37.
6. MIKLAVČIČ, Damijan (urednik). *Handbook of electroporation : reference work 2017*. Cham: Springer International Publishing, cop. 2017. ISBN 978-3-319-32886-7. ISBN 978-3-319-32887-4

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet: Seminar iz elektroenergetike
Course title: Seminar in Electric Power Engineering

Študijski programi in stopnja	Študijska smer	Letnik	Semestri
Elektrotehnika, druga stopnja, magistrski	Elektroenergetika (smer)	2. letnik	Zimski

Univerzitetna koda predmeta/University course code: 64286

Predavanja	Seminar	Vaje	Klinične vaje	Druge oblike študija	Samostojno delo	ECTS
15		60			75	6

Nosilec predmeta/Lecturer: Marko Čepin

Vrsta predmeta/Course type: Obvezni-strokovni /Compulsory professional

Jeziki/Languages:

Predavanja/Lectures:	Slovenščina
Vaje/Tutorial:	Slovenščina

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

Prerequisites:

Vpis v letnik predmeta	Enrolment in the year of the course
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Vsebina:

Identifikacija problemov na področju elektroenergetike. Zbiranje podatkov o problemih in možnih rešitvah v strokovni literaturi v knjižničnih zbirkah, v bazah podatkov na internetu, ter pri ustreznih poslovnih subjektih. Izbira metod za reševanje problemov. Določitev potrebnih korakov za rešitev problemov. Preverjanje možnih rešitev problemov z uporabo pridobljenih znanj in računalniških in drugih orodij. Izdelava in ustna predstavitev pisnega poročila o opravljenem delu.

Content (Syllabus outline):

Identification of problems in the area of electric power systems. The collection of data about problems and possible solutions in the literature: library collections, databases on Internet, and at the relevant business entities. The selection of methods to solve problems. Determination of the necessary steps to solve the problems. Verifying the possible solutions with the use of acquired knowledge, computer codes and other tools. Preparation and oral presentation of a written report on the work done.

Temeljna literatura in viri/Readings:

- Adrian Wallwork, English for Writing Research Papers, Springer, 2011
- ČEPIN, Marko. Assessment of power system reliability. London: Springer, 2011.

Cilji in kompetence:

Cilj seminarja je študenta vključiti v raziskovalno in razvojno delo ter ga naučiti povezati in ustrezno uporabiti pridobljena strokovna znanja s področja elektroenergetike na realnih primerih. Študent si bo z izdelavo in predstavitvijo seminarja nabral izkušnje, ki mu bodo koristile pri samostojni izdelavi diplomske naloge.

Objectives and competences:

The objective of the seminar is to enable students to participate in research and development, and to teach them how to connect the acquired skills in the field of electric power industry with solving of the real problems. The student will get the experience for writing the thesis.