

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	NMR v biomedicini
Course title:	NMR in Biomedicine

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biomedicinska tehnologija/Biomedical Technology 3. stopnja/3rd Degree		2	3 ali 4

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. Delo Individ. Work	ECTS
15	20	10			105	5

Nosilec predmeta / Lecturer:

Prof. dr. Igor Serša

Jeziki /

Predavanja / Lectures:

Slovenščina / Slovene

Languages:

Vaje / Tutorial:

Slovenščina / Slovene

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

Prerequisites:

Kandidat mora doseči 300 ECTS na predhodnem študiju.

Graduate degree 300 ECTS

Vsebina:

Content (Syllabus outline):

Fizikalno ozadje jedrske magnetne resonance in njena uporaba v medicini. Principi delovanja magnetno-resonančnega tomografa in različne metode slikanja in metode spektroskopije z magnetno resonanco. Poleg fizikalnega ozadja metod bo predstavljena tudi njihova uporabnost v medicinski diagnostiki. Dejavniki, ki vplivajo na kvaliteto slik in nevarnostmi pri delu, praktična znanja pri delu z magnetno-resonančnim tomografom.

Nuclear magnetic resonance and its applications in medicine. They will learn how a magnetic resonance tomography works and will get to know magnetic resonance imaging and magnetic resonance spectroscopy techniques. In addition to understanding physical background of the methods, the use of the methods for medical diagnostics will be discussed as well. Different factors that influence image quality, safety factors and practical experience.

Temeljni literatura in viri / Readings:

- Demšar F., Jevtič V., Bačič G., Slikanje z magnetno resonanco, Littera picta, Ljubljana 1996, ISBN: 9616030191
- Vlaardingerbroek M.T., den Boer J.A., Magnetic Resonance Imaging, Springer, Berlin 1996, ISBN: 3540600809
- Haacke E.M., Brown R.W., Thompson M.R., Venkatesan R., Magnetic Resonance Imaging (physical principles and sequence design), John Wiley & Sons, New York 1999, ISBN: 0471351288
- William R., Hendee, E. Russell Ritenour, Medical Imaging Physics, 4th edition, John Wiley & Sons, New York 2002, ISBN: 0471382264

Cilji in kompetence:

Objectives and competences:

- Razumevanje delovanja magnetno-resonančnega tomografa
- Metode slikanja z magnetno resonanco in področij njihove uporabe

- Understanding principles of work of a magnetic resonance tomography
- Magnetic resonance tomography methods together with their most common applications in medicine

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje:

Knowledge and understanding:

- Pregled nad metodami slikanja z magnetno resonanco in njihovo uporabo
- Pridobljen občutek za vpliv parametrov slikanja na

- Magnetic resonance tomography methods and their applications overview
- To understand influence of magnetic resonance

kontrast in kvaliteto slike

Prenesljive/ključne spretnosti in drugi atributi:

Boljše razumevanje ostalih metod tomografije (CT) in boljša podlaga za lažje razumevanje novih medicinskih slikovnih metod, ki šele nastajajo.

Metode poučevanja in učenja:

- predavanja
- seminarji
- praktično delo z MR tomografom

parameters to image quality and contrast

Transferable/Key Skills and other attributes:

Better understanding of other tomographic methods like CT. It will also help to better understand other still developing medical imaging methods.

Learning and teaching methods:

- lectures
- seminars
- experimental work on a MR tomograph

Delež (v %) /

Weight (in %)

Načini ocenjevanja:

Assessment:

Ustno izpraševanje
Seminarsko delo

Oral examination
Seminar work