Univerza v Mariboru

MEDICINSKA FAKULTETA UM
FACULTY OF MEDICINE UM

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Uvod v raziskovalno delo in telemedicino
Course title:	Introduction to Research and Telemedicine

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Splošna medicina		**6**	**11**
General medicine - EMŠP			

Vrsta predmeta / Course type	
Univerzitetna koda predmeta / University course code:	

Predavanja **Lectures**	**Seminar** **Seminar**	**Sem. vaje** **Tutorial**	**Lab. vaje** **Laboratory work**	**Teren. vaje** **Field work**	**Samost. delo** **Individ. work**	**ECTS**
15	**45**	**-**	**15**	**-**	**45**	**4**

Nosilec predmeta / Lecturer:	Red. prof. dr. Pavel Skok Izred. prof. dr. Dejan Dinevski

Jeziki / Languages:	**Predavanja / Lectures:**	Slovensko/Slovene
	Vaje / Tutorial:	Slovensko/Slovene

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

Vsebina:	**Content (Syllabus outline):**
Definiranje pojma znanosti, povezanost s filozofijo in etiko. Razmejitev med strokovnim in raziskovalnim delom kot virom novega znanja. Spoznati splošne metode znanstveno raziskovalnega dela, pomen povezanosti teoreticnih znanj in uporabe v klinicni medicini, algoritmi odlocanja. Raziskovalno delo kot metoda preverjanja klinicnih odlocitev in odgovornega sledenja posledic. Eticna in pravna vprašanja pri raziskovanju v biomedicini, odnos med zdravnikom, farmacevtsko industrijo in bolnikom, njegova obveščenost in soodlocanje. Definiranje odnosov vzrok – posledica v biomedicini in vloga presejalnih testov. Razumevanje osnovnih statisticnih pojmov v biomedicini (incidenca, prevalenca, pozitivna in negativna napovedna vrednost, obcutljivost	Definition of the term science, relationship with phylosophy and ethics. Boundaries between scientific and research work as sources of new knowledge. Common methods of scientific research, mening of liasion of theoretical knowledge and and its aplication in clinical medicine, algorithams of decision making. Research work as method of of clinical decisions and responsible consequences following-up testing. Ethical and legislative questions in biomedicne research, relationship between pfysician, pharmaceutical industry and patient's acknowledgment and codecison-making. Definiton of relationsheep cause – consequence in biomedicine and role of screening tests. Comprehension of basic statistic terms in biomedicine (incidence, prevalence, positive and negative prognostic values, sensitivity and

in specificnost testov, lažno pozitivnih in negativnih rezultatov), pomena relativnega tveganja in razmerja obetov. Razlikovanje prospektivnih, retrospektivnih, epidemioloških, kontroliranih, randomiziranih, kohortnih, primer – kontrola in dvojno slepih vrst raziskav. Pomen racunalniške tehnologije in statisticnih orodij pri znanstveno raziskovalnem delu.

Telemedicina

- Osnove in principi telemedicine
- Zgodovina telemedicine ter njene prednosti
- Tehnološki temelji telemedicine in standardi za prenos medicinskih podatkov
- Medicinski senzorji za prenos informacij o stanju pacienta
- Praktične aplikacije telemedicine v zdravstvenem sistemu:
  - telezdravstvo,
  - nega bolnika na daljavo,
  - nadzor bolnika na daljavo,
  - telekonzultacije
- Videokonferenca v telemedicini –drugego mnenje na daljavo
- Praktični primeri na posameznih medicinskih področjih: teledermatologija, telekirurgija, telepatologija, telekardiologija…
- Informacijski sistemi v medicini,
- Uporaba slik in v medicini (DICOM),
- Odločitveni sistemi v medicini,
- Inteligentni sistemi v medicini,
- Moderna telemedicinska praksa v svetu in v Sloveniji

specificity of tests, false positive and negative results), meaning of relative risk and expectation ratio. Distinguishes between prospective, retrospective, epidemiologic, followed-up, randomised, cohort , case – control, and double blind researches. Importance of computer technology and statistic software in scientific research work.

Telemedicine

- telemedicine basics and principles,
- history of telemedicine and its advantages,
- technological basis of telemedicine and the standards for medical data transfer,
- medical sensors for data transfer about the state of a patient,
- practical application of telemedicine in the health system:
  - telehealth service,
  - remote patient care,
  - remote patient control,
  - teleconsultations,
- videoconferencing in telemedicine – remote second opinion,
- practical cases in individual medical areas: teledermatology, telesurgery, telepathology, telecardiology …,
- information system in medicine,
- use of pictures and graphics in medicine (DICOM),
- determination systems in medicine,
- intelligent systems in medicine,
- modern telemedical practice in the world and in Slovenia.

Temeljni literatura in viri / Readings:

1. Hans F. Ebel et al. The Art of Scientific Writing : From Student Reports to Professional Publications in Chemistry and Related Fields, 2nd ed. Wiley Verlag, Weinheim 2004.
2. Beauchamp TL, Childress JE. Principles of biomedical ethics, 5th ed. Oxford University Press, Oxford 2001.
3. Norman K. Denzin (Editor), Yvonna S. Lincoln (Editor) Handbook of Qualitative Research,2nd ed. Sage publications, London 2000.
4. Altman DC. Practical statistics for medical research. Chapman&Hall. London 1996.
5. Matthews DE, Farewell VT. Using and understanding statistics. Karger, Basel, 1996.
6. Adamič Š. Temelji biostatistike, Medicinska fakulteta Ljubljana, 1989.
7. Edward H. Shortliffe, James J. Cimino: *Biomedical Informatics*, Springer USA, 2006
8. R.L. Bashsur, G.W. Shannon, History of *Telemedicine, Mary Ann Liebert, 2009*

Cilji in kompetence:

Razumeti pomen znanosti in pogojev za raziskovalno delo ter ustvarjanje novega znanja.Ustvariti razmišljujoc odnos do raziskav v biomedicini, molekularni biologiji in genski tehnologiji. Spoznati osnove raziskovalnega dela v biomedicini in bioznanostih, povezavo in pomen epidemiologije, biostatistike in njenih orodij(statisticnih testov, vrednotenja), vloga

Objectives and competences:

Understanding the meaning of science and research work conditions and new knowledge acquiring. Establishment of contemplative approach to researches in biomedicine, molecular biology and genetic technology. Acquiring of basic knowledge about researching in biomedicine and biosciences, relationship and importance of epidemilogy, biostatistic and their tools (statistic tests, evaluation)

izsledkov za javno zdravje. Študent se bo na podlagi osnovnih znanj poglobil v nekatera od naštetih poglavij telemedicine in medicinske informatike z namenom globljega razumevanja in obvladovanja le-teh.	importance of findings to public health. On the basis of their knowledge, students will deepen it in some of the listed telemedicine and medical informatics chapters in order to better understand and utilize acquired knowledge.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje pomena znanosti, kriticnega vrednotenje izsledkov raziskav v biomedicini in preverjanje domnev. Zavedanje možnih napak pri analizah, sklepanju in prikazovanju rezultatov. Sposobnost analize znanstveno raziskovalnih prispevkov, vsebinska in kvalitativna. Prenesljive/kljucne spretnosti in drugi atributi: Nacrtovanje raziskave, pomen natancnosti in tocnosti pri zbiranju podatkov in izvajanju raziskave, obdelava in kvantitativna/kvalitativna interpretacija pridobljenih rezultatov v skladu z znanimi dejstvi in pridobljenimi novimi spoznanji. Po zaključku tega predmeta bo študent razumel in poznal področja telemedicine in medicinske informatike, 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	Knowledge and Understanding of the meaning of science, critical assesment of the research results in biomedicine and hypothesis testing. Awareness of posibility of false analise results, conclusions and result presentation. Ability of scientific research contributions, content and quality analyse. Transferable/Key Skills and other attributes: Research planning, meaning of precision and accuracy in data collection, carrying out of the research, data processing, quantitative and qualitative interpretantion of reslults according to known facts and new findings. On the completion of this course students will: understand and be acquainted with the basics of telemedicine and medical informatics, and be able to use the applications from the listed chapters. Transferable/Key skills and other attributes: • Autonomous work with a computer • Use of computer applications and information technology • Ability of searching for information

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Seminar • Vaje, e-izobraževanje	• Lectures, • Seminar • Excercises, e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
seminarska naloga	34%	Seminar work
pisni izpit - test ob uporabi racunalnika	66%	Written exam