



Univerza v Mariboru

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Izbrana poglavja iz urgentne medicine
Course title:	Chosen Chapters from Emergency Medicine

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	Klin. vaje work	Druge oblike študija	Samost. Delo Individ. Work	ECTS
15	15	15			135	6

Nosilec predmeta / Lecturer: Izr. prof. dr. Matej Strnad

Jeziki / Languages: **Predavanja / Lectures:** Slovenščina / Slovene; Angleščina / English
Vaje / Tutorial: -

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

Kandidat mora doseči 300 ECTS na predhodnem študiju.

Graduate degree 300 ECTS

Vsebina:

Vsebina študijskega predmeta »Izbrana poglavja iz urgentne medicine« zajema proučevanje novih metodologij za diagnostiko, spremljanje in zdravljenje najpogostejših patoloških stanj v urgentni medicini. Predmet zajema tudi proučevanje znanj in novih metodologij obposteljnega (»point-of-care«) ultrazvoka (UZ) za diagnostiko in spremljanje zdravljenja (»monitoring«) izbranih bolezenskih entitet s področja urgentne medicine. V okviru predmeta bodo slušatelji, poleg preučevanja tehnik, indikacij in omejitve ter interpretacij dobljenih rezultatov, preučevali tudi umeščenost obposteljne ultrazvočne diagnostike v proces obravnave kritično obolelega pacienta (princip »z obposteljnimi ultrazvokom« podprtega diagnostično-terapevtskega odločanja). Študij bo predstavljal povezavo med kliničnim delom, kliničnim znanstvenim raziskovanjem ter novimi spoznanji sodobnih diagnostičnih preiskav in zdravljenja. Poudarek bo predvsem na naslednjih področjih urgentne medicine:

- dispečerski sistem
- oživljanje (reanimacija)
- srčno žilne bolezni
- bolezni pljuč
- bolezni centralnega živčnega sistema
- akutni abdomen
- poškodbe

Content (Syllabus outline):

The contents of the study programme »Chosen chapters from emergency medicine« comprise the studying of new methodologies for diagnosis, evaluation and monitoring of treatment of most common disease entities in/from the field of emergency medicine.

The students will study various ultrasound (US) technics, indications and limitations of point-of-care ultrasound, interpret point-of-care ultrasound findings as well as research the importance of point-of-care ultrasound in management of critically ill patients (principle of point-of-care ultrasound enhanced diagnostic processes and therapeutic decision-making).

The study will represent a connection between clinical work, clinical scientific research and new knowledge acquired by modern diagnostic investigation and treatment.

The stress will be above all on the following fields of emergency medicine:

- dispatch system
- resuscitation
- cardio vascular diseases
- lung diseases
- central nervous system diseases
- acute abdomen
- trauma
- sepsis

<ul style="list-style-type: none"> • sepsa • UZ pri motnjah zavesti (transkranialni ultrazvok, ultrazvočno določanje intrakranialnega tlaka, ocena zeničnih reakcij), • UZ dihalne poti, • UZ pri dispnoičnem bolniku in bolniku s prsno bolečino (ultrazvok stene prsnega koša, ultrazvok pljuč, usmerjena ehokardiografija, ultrazvok globokega venskega sistema), • UZ pri bolniku z bolečino v trebuhu (usmerjeni ultrazvok žolčnika, ledvic, črevesnih vijug in slepiča, prisotnost proste tekočine), • UZ pri nediferenciranem šokiranem bolniku (ultrazvočni protokol RUSH) • UZ pri kritično prizadetem poškodovancu (ultrazvočni protokoli FAST, E-FAST in FAST-ER). 	<ul style="list-style-type: none"> • US in altered mental status and head trauma patients (transcranial ultrasound, evaluation of intracranial pressure with ultrasound, evaluation of pupil reactions), • US of airway, • US in patients with acute dyspnoea and chest pain (ultrasound of thoracic wall, lung ultrasound, focused echocardiography, deep venous ultrasound), • US in patients with acute abdominal pain (focused ultrasound of gallbladder, kidneys, intestine and appendix, free fluid in abdomen), • US in undifferentiated patients in shock (RUSH protocol) • US in patients with life threatening injuries (FAST, E-FAST, FAST-ER protocols).
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Temeljni literatura in viri / Readings:

- 1. Tintinalli JE, Kelen GD, Stapczynski JS. Emergency medicine – A comprehensive study guide – 7th ed. , Mcgraw-Hill, New York 2011.
- 2. Marx JA, Hockberger RS, Walls RM. Rosen's Emergency Medicine: concepts and clinical practice, 8th ed., Philadelphia, Mosby-Elsevier, 2014.
- 3. American college of surgeons. Advanced trauma life support. 9th ed. American College of Surgeons, Chicago, 2012.
- Strnad M. Urgentna medicina. 1 izd. , Univerza v Mariboru, Univerzitetna založba, Maribor 2022.

Nadaljevalna, dopolnilna literatura / Additional, complementary readings:

- Grmec Š, Čretnik A, Kupnik D. Oskrba poškodovancev v predbolnišničnem okolju. Univerza v Mariboru; Maribor, 2006.
- Grmec Š, Kupnik D (urednika). Nujna stanja, Katedra za prvo pomoč in Katedra za družinsko medicino MF Maribor, Zbirka Acuta, 2008.
- SMERNICE evropskega reanimacijskega sveta za oživljanje 2021 : slovenska izdaja / [avtorji angleškega izvirnika Gavin D. Perkins ... [et al.] ; avtorji slovenske izdaje Špela Baznik ... [et al.] ; uredniki slovenske izdaje Primož Gradišek, Mojca Grošelj Grenc, Alenka Strdin Košir]. – 1. izd. – Ljubljana : Slovensko združenje za urgentno medicino, 2021. Dostopna na: https://www.szum.si/media/uploads/files/Smernice_2021.pdf
- Avsec M, urednik. Šola urgentne medicine 2023: zbornik predavanj: zbornik 5. letnik, 2. cikel. – 1. izd. – El. knjiga. – Ljubljana: Slovensko združenje za urgentno medicino 2023. Dostopno na: https://www.szum.si/media/uploads/files/X_%20sola%20urgentne%20medicine.pdf
- Avsec M, urednik. Šola urgentne medicine 2022: zbornik predavanj: zbornik 4. letnik, 2. cikel. – 1. izd. – El. knjiga. – Ljubljana: Slovensko združenje za urgentno medicino 2023. Dostopno na: <https://www.szum.si/media/uploads/files/Zbornik-SUM-2022.pdf>
- Avsec M, urednik. Šola urgentne medicine 2021: zbornik predavanj: zbornik 3. letnik, 2. cikel. – 1. izd. – El. knjiga. – Ljubljana: Slovensko združenje za urgentno medicino 2021. Dostopno na: <https://www.szum.si/media/uploads/files/VIII-sola-urgentne%20medicine-2021-3-letnik-2-cikel-zbornik-predavanj.pdf>
- Prosen G, urednik. Zbornik VII. Šole urgence 2019: zbornik predavanj: zbornik 2. letnik, 2. cikel – 1. izd. – El. knjiga. – Ljubljana: Slovensko združenje za urgentno medicino 2019. Dostopno na: <http://www.szum.si/literatura.html> (Zbornik-SUM-2019.pdf)
- Prosen G, urednik. Zbornik VI. Šole urgence 2018: zbornik predavanj: zbornik 1. letnik, 2. cikel. – 1. izd. – El. knjiga. – Ljubljana: Slovensko združenje za urgentno medicino 2018. Dostopno na: <http://www.szum.si/literatura.html> (Zbornik-SUM-2018.pdf)
- Možina H, Prosen G, urednika. Kompendij pripravištva za poklic zdravnik. – 1. izd. – El. knjiga. - Ljubljana:

Zdravniška zbornica Slovenije 2018. Dostopno na: https://www.zdravniskazbornica.si/docs/default-source/e-izobrazevanja/kompending-julij-2018-za-print-a5.pdf?sfvrsn=ecec3336_23

Cilji in kompetence:

- Namen predmeta »Izbrana poglavja v urgentni medicini« je pridobiti širše znanje in razumevanje patofiziologije iz posameznih področij urgentne medicine,.
- razumevanje in kritično vrednotenje obposteljne ultrazvočne diagnostike v procesu obravnave kritično obolelega;
- kritično vrednotenje ter možnost prenosa v klinično prakso novih obposteljnih ultrazvočnih aplikacij (transkranialni ultrazvok, ultrazvočno merjenje IKT, okularni ultrazvok, ultrazvok dihalnih poti, ultrazvočni protokoli za obravnavo nediferenciranih bolnikov);
- razumevanje tehnik, indikacij, omejitev in interpretacij dobljenih rezultatov obposteljne ultrazvočne preiskave.

Zato je cilj uvajanje novih ter izboljševanje obstoječih diagnostičnih ter terapevtskih postopkov ter njihov prenos v vsakdanjo klinično prakso.

Objectives and competences:

- The objective of the study »Chosen chapters from emergency medicine« is to acquire knowledge and comprehension of pathophysiology from specific fields of emergency medicine.
- comprehension and evaluation of point-of-care ultrasound diagnostics in management of critically ill patients;
- applicability evaluation and transfer of new point-of-care ultrasound applications into clinical praxis (transcranial ultrasound, evaluation of intracranial pressure with ultrasound, ocular ultrasound, airway ultrasound, ultrasound protocols for undifferentiated patients);
- comprehension of technics, indications, limitations and interpretations of point-of-care ultrasound findings.
- Therefore, the objective will be the introduction of new and improvement of contemporary diagnostic and therapeutic procedures and their transfer into everyday clinical practice.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Osvojitev novih znanj s posameznih področij urgentne medicine in njihovo razumevanje, ki jih bo mogoče neposredno koristiti v procesu zdravljenja in spremljanja bolezni.
- Osvojitev novih znanj s področja ultrazvoka v urgentni medicini ter njihovo razumevanje, ki jih bo mogoče neposredno koristiti v procesu zdravljenja in spremljanja kritično obolelih.
- Ključne veščine ultrazvoka v urgentni medicini.

Prenesljive/ključne spretnosti in drugi atributi:

Odvisno od raziskovalnega področja in samega raziskovalnega projekta.

Metode poučevanja in učenja:

Predavanja, seminarji, seminarske vaje, samostojno raziskovalno delo.

Intended learning outcomes:

Knowledge and understanding:

- Acquired new knowledge from specific fields in emergency medicine, which can be applied directly in the processes of treatment and monitoring of critically ill patients.
- Acquired new knowledge in the field of ultrasound in emergency medicine, which can be applied directly in the processes of treatment and following of critically ill patients.
- Key skills in emergency medicine ultrasound.

Transferable/Key Skills and other attributes:

Depends on the research field and the research project.

Learning and teaching methods:

Lectures, seminars, tutorials, independent research work.

Načini ocenjevanja:

- Ustni izpit
- Seminarska naloga

Delež (v %) /

Weight (in %) /

50%
50%

Assessment:

- Oral exam
- Seminar paper

Reference nosilca / Lecturer's references:

1. PETRAVIĆ, Luka, BAJEC, Boštjan, BURGER, Evgenija, TIEFENGRABER, Eva, SLAVEC, Ana, STRNAD, Matej. Emergency physician personnel crisis : a survey on attitudes of new generations in Slovenia. *BMC emergency medicine*. 2024, vol. 24, [article no.] 25, 14 str. ISSN 1471-227X. <https://bmccemergmed.biomedcentral.com/articles/10.1186/s12873-024-00940-z#MOESM4>, DOI: [10.1186/s12873-024-00940-z](https://doi.org/10.1186/s12873-024-00940-z). [COBISS.SI-ID [185604867](https://www.cobiss.si/record/185604867)], [JCR, SNIP, WoS, Scopus]
 2. PRIVŠEK, Matevž, STRNAD, Matej, MARKOTA, Andrej. Addition of vitamin C does not decrease neuron-specific enolase levels in adult survivors of cardiac arrest - results of a randomized trial. *Medicina*. Jan. 2024, vol. 60, issue 1, str. [1]-14, ilustr. ISSN 1648-9144. <https://doi.org/10.3390/medicina60010103>, <https://www.mdpi.com/1648-9144/60/1/103>, DOI: [10.3390/medicina60010103](https://doi.org/10.3390/medicina60010103). [COBISS.SI-ID [179990019](https://www.cobiss.si/record/179990019)], [JCR, SNIP, WoS, Scopus]
financer: Financer: Internal Research Projects Grant of University Medical Centre Maribor, Slovenia (grant no. IRP-2019/02-05, grant date 5 December 2019)
 3. KOŽELJ, Anton, STRAUSS, Maja, POŠTUVAN, Vita, STRAUSS KOŽELJ, Anže, STRNAD, Matej. Perception of personal participation of the nurses in resuscitation procedures: a qualitative study. *Medicina*. 2024, vol. 60, issue 2, [article no.] 196, str. [1]-14. ISSN 1648-9144. <https://doi.org/10.3390/medicina60020196>, <https://www.mdpi.com/1648-9144/60/2/196>, DOI: [10.3390/medicina60020196](https://doi.org/10.3390/medicina60020196). [COBISS.SI-ID [182387971](https://www.cobiss.si/record/182387971)], [JCR, SNIP, Scopus]
 4. FEKONJA, Zvonka, KMETEC, Sergej, MLINAR RELJIĆ, Nataša, ČERNE KOLARIČ, Jožica, PAJNKIHAR, Majda, STRNAD, Matej. Perceptions of patient safety culture among triage nurses in the emergency department : a cross-sectional study. *Healthcare*. 2023, vol. 11, issue 24, [article no.] 3155, str. 1-13, tabele. ISSN 2227-9032. <https://www.mdpi.com/2227-9032/11/24/3155>, DOI: [10.3390/healthcare11243155](https://doi.org/10.3390/healthcare11243155). [COBISS.SI-ID [177262595](https://www.cobiss.si/record/177262595)], [JCR, SNIP, WoS, Scopus]
 5. STRNAD, Matej, BOROVIK LESJAK, Vesna, JEROT, Pia, ESIH, Maruša. Prehospital predictors of survival in patients with out-of-hospital cardiac arrest. *Medicina*. 2023, vol. 59, issue 10, [article no.] 1717, str. [1]-9. ISSN 1648-9144. <https://www2.mdpi.com/1648-9144/59/10/1717>, <https://doi.org/10.3390/medicina59101717>, DOI: [10.3390/medicina59101717](https://doi.org/10.3390/medicina59101717). [COBISS.SI-ID [166626819](https://www.cobiss.si/record/166626819)], [JCR, SNIP, WoS, Scopus]
 6. VUJANOVIĆ, Vitka, BOROVIK LESJAK, Vesna, MEKIŠ, Dušan, STRNAD, Matej. Dynamics of capillary lactate levels in patients with out-of-hospital cardiac arrest. *Medicina*. 2023, vol. 59, issue 11, [article no.] 1989, str. [1]-11, ilustr. ISSN 1648-9144. <https://doi.org/10.3390/medicina59111989>, <https://www.mdpi.com/1648-9144/59/11/1989>, DOI: [10.3390/medicina59111989](https://doi.org/10.3390/medicina59111989). [COBISS.SI-ID [171801859](https://www.cobiss.si/record/171801859)], [JCR, SNIP, WoS, Scopus]
 7. KOŽELJ, Anton, ŠIKIĆ POGAČAR, Maja, FIJAN, Sabina, STRAUSS, Maja, POŠTUVAN, Vita, STRNAD, Matej. Exploring the feelings of nurses during resuscitation : a cross-sectional study. *Healthcare*. 2022, vol. 10, no. 1, str. 1-12, tabele, graf. prikazi. ISSN 2227-9032. <https://www.mdpi.com/2227-9032/10/1/5>, <https://www.mdpi.com/2227-9032/10/1/5/htm>, DOI: [10.3390/healthcare10010005](https://doi.org/10.3390/healthcare10010005). [COBISS.SI-ID [90631427](https://www.cobiss.si/record/90631427)], [JCR, SNIP, WoS do 24. 1. 2024: št. citatov (TC): 6, čistih citatov (CI): 6, čistih citatov na avtorja (CIAu): 1.00, Scopus do 25. 1. 2024: št. citatov (TC): 6, čistih citatov (CI): 6, čistih citatov na avtorja (CIAu): 1.00]
 8. BOROVIK LESJAK, Vesna, ŠORGO, Andrej, STRNAD, Matej. Retention of knowledge and skills after a basic life support course for schoolchildren : a prospective study. *Inquiry : journal of health care organization, provision, and financing*. 2022, vol. 39, str. [1]-6, ilustr. ISSN 1945-7243. <https://doi.org/10.1177/00469580221098755>, <https://journals.sagepub.com/doi/full/10.1177/00469580221098755>, DOI: [10.1177/00469580221098755](https://doi.org/10.1177/00469580221098755). [COBISS.SI-ID [111511043](https://www.cobiss.si/record/111511043)], [JCR, SNIP, WoS do 15. 12. 2023: št. citatov (TC): 5, čistih citatov (CI): 5, čistih citatov na avtorja (CIAu): 1.67, Scopus do 16. 12. 2023: št. citatov (TC): 4, čistih citatov (CI): 4, čistih citatov na avtorja (CIAu): 1.33]
 9. FEKONJA, Urška, STRNAD, Matej, FEKONJA, Zvonka. Association between triage nurses' job satisfaction and professional capability: results of a mixed-method study. *Journal of nursing management*. Nov. 2022, vol. 30, issue 8, str. 4364-4377, ilustr. ISSN 1365-2834. <https://doi.org/10.1111/jonm.13860>, <https://onlinelibrary.wiley.com/doi/10.1111/jonm.13860>, <https://dk.um.si/lzpisGradiva.php?id=86055>, DOI: [10.1111/jonm.13860](https://doi.org/10.1111/jonm.13860). [COBISS.SI-ID [126967043](https://www.cobiss.si/record/126967043)], [JCR, SNIP, WoS do 6. 10. 2023: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0.33, Scopus do 19. 9. 2023: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0.33]
<http://www.dlib.si/details/URN:NBN:SI:doc-OOVIZSP6>, DOI: [10.14528/snr.2022.56.1.3088](https://doi.org/10.14528/snr.2022.56.1.3088). [COBISS.SI-ID [102098947](https://www.cobiss.si/record/102098947)]
 10. STRNAD, Matej, JEROT, Pia, BOROVIK LESJAK, Vesna. Impact of dual dispatch system implementation on response times and survival outcomes in out-of-hospital cardiac arrest in rural areas. *Signa vitae*. 2022, vol. 18, iss. 1, str. 76-83. ISSN 1845-206X. <https://www.signavitae.com/articles/10.22514/sv.2021.134>, DOI: [10.22514/sv.2021.134](https://doi.org/10.22514/sv.2021.134). [COBISS.SI-ID [81212419](https://www.cobiss.si/record/81212419)], [JCR, SNIP, WoS do 21. 11. 2023: št. citatov (TC): 1, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0.00, Scopus do 3. 2. 2024: št. citatov (TC): 1, čistih citatov na avtorja (CIAu): 0.00]
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- 12.** FIJAČKO, Nino, MASTERSON CREBER, Ruth, GOSAK, Lucija, ŠTIGLIC, Gregor, EGAN, Dominic, CHAKA, Brian, DEBELJAK, Nika, STRNAD, Matej, SKOK, Pavel. Evaluating quality, usability, evidence-based content, and gamification features in mobile learning apps designed to teach children basic life support: systematic search in apps stores and content analysis. *JMIR mhealth and uhealth*. 2021, vol. 9, issue 7, str. 1-16, ilustr. ISSN 2291-5222. <https://mhealth.jmir.org/2021/7/e25437>, DOI: [10.2196/25437](https://doi.org/10.2196/25437). [COBISS.SI-ID [72125699](https://www.cobiss.si/record/72125699)], [JCR, SNIP, WoS do 2. 3. 2024: št. citatov (TC): 4, čistih citatov (CI): 4, čistih citatov na avtorja (CIAu): 0.44, [Scopus](https://scopus.com) do 20. 2. 2024: št. citatov (TC): 8, čistih citatov (CI): 7, čistih citatov na avtorja (CIAu): 0.78]
- financer: Delno podprto s strani Digital toolbox for innovation in nursing education (I-BOX), Improving health care students - competences for behaviour change to effectively support self-care in chronic diseases (Train4Health), sofinancer program Erasmus+ Evropske unije; ARRS, Projekti, N2-0101, SI, Izboljšanje razumljivosti in napovedane zmogljivosti modelov za oceno tveganja in podporo odločanju v kliničnem okolju; ARRS, Programi, P2-0057, SI, Informacijski sistemi
- 13.** WNENT, Jan, TJELMELAND, Ingvild B. M., LEFERING, Rolf, KOSTER, Rudolph W., MAURER, Holger, MASTERSON, Siobhán, HERLITZ, Johan, BÖTTIGER, Bernd W., ROSELL ORTIZ, Fernando, PERKINS, Gavin D., MARKOTA, Andrej, et al., MAČEK, Rok (927), RUBELLI FURMAN, Matej (927), PODHOSTNIK, Samo (927), OMAN, Miha (927), LIPOVŠEK, Klemen (927), BAZNIK, Špela (927), FERENČINA, Jurica (927), STRNAD, Matej (927), ŽIŽEK SAPAČ, Edith (927), KODELA, Miha (927), ANTOLINC KOŠAT, Alenka (927), LOTRIČ, Nina (927), et al. To ventilate or not to ventilate during bystander CPR - a EuReCa TWO analysis. *Resuscitation*. [Online ed.]. 2021, vol. 166, str. 101-109, ilustr. ISSN 1873-1570. <https://doi.org/10.1016/j.resuscitation.2021.06.006>, [https://www.resuscitationjournal.com/article/S0300-9572\(21\)00229-X/pdf](https://www.resuscitationjournal.com/article/S0300-9572(21)00229-X/pdf), DOI: [10.1016/j.resuscitation.2021.06.006](https://doi.org/10.1016/j.resuscitation.2021.06.006). [COBISS.SI-ID [67503363](https://www.cobiss.si/record/67503363)], [JCR, SNIP, WoS do 15. 1. 2024: št. citatov (TC): 12, čistih citatov (CI): 12, čistih citatov na avtorja (CIAu): 0.53, [Scopus](https://scopus.com) do 30. 12. 2023: št. citatov (TC): 12, čistih citatov (CI): 12, čistih citatov na avtorja (CIAu): 0.53]
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