



UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Urgentna medicina
Course title:	Emergency Medicine

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
EMŠP Splošna medicina		5.	9.
General medicine		5th	9th

Vrsta predmeta / Course type

redni / regular

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Klinične vaje Practical work	Praktikum Practical work	Samost. delo Individ. work	ECTS
10	20	-	15		45	3

Nosilec predmeta / Lecturer:

izr. prof. dr. Matej Strnad, dr. med., spec.

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovensko / slovene

slovensko / slovene

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

Prerequisites:

Vsebina:

Predavanja:

- sistem NMP v Sloveniji,
- masovne nesreče in principi triaže,
- pristop k nenadno obolelemu oz. poškodovanemu odraslemu,
- pristop k nenadno obolelemu oz. poškodovanemu otroku,
- bolečina v prsih,
- dispneja,
- bolečina v trebuhu,
- sinkopa in motnje zavesti,
- šok,
- huda poškodba glave in možganov.

Seminarji:

- univerzalni ABCDE pristop,
- bolečina v prsih in trebuhu ter dispneja,
- motnje zavesti in zastrupitve.

Klinične vaje:

- urgentni center (UC) enota Bolezni,
- UC enota Poškodbe
- UC enota Hitri pregledi

Content (Syllabus outline):

Lectures:

- EMS system in Slovenia,
- mass casualty incidents and principles of triage,
- systematic approach to acutely ill/injured adult,
- systematic approach to acutely ill/injured child,
- chest pain,
- dyspnea,
- abdominal pain,
- syncope and altered level of consciousness/ mental status,
- shock,
- severe head and brain injury.

Seminars:

- universal ABCDE approach,
- chest pain, abdominal pain, and dyspnea,
- altered mental status/level of consciousness and intoxication.

Practical work:

- Emergency department (Emergencies)
- Emergency department (Accidents)
- Emergency department (Fast track)

Temeljni literatura in viri / Readings:**Temeljna literatura / Basic readings:**

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

Nadaljevalna, dopolnilna literatura / Additional, complementary readings:

1. Grmec Š, Čretnik A, Kupnik D. Oskrba poškodovancev v predbolnišničnem okolju. Univerza v Mariboru; Maribor, 2006.
2. Grmec Š, Kupnik D (urednika). Nujna stanja, Katedra za prvo pomoč in Katedra za družinsko medicino MF Maribor, Zbirka Acuta, 2008.
3. 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
4. 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
5. 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>
6. 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>
7. 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)
8. 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)
9. Možina H, Prosen G, urednika. Kompendij pripravništva za poklic zdravnik. – 1. izd. – El. knjiga. - Ljubljana: Zdravniška zbornica Slovenije 2018. Dostopno na: https://www.zdravniskazbornica.si/docs/default-source/e-izobrazevanja/kompendij-julij-2018-za-print-a5.pdf?sfvrsn=ecec3336_23

Cilji in kompetence:

Cilji so usposobiti slušatelje, da bodo poznali in razumeli:

- organiziranost Nujne medicinske pomoči v Sloveniji ter zakonodajo s področja Nujne medicinske pomoči,
- značilnosti helikopterske NMP ter primarnih in sekundarnih helikopterskih prevozov,
- organiziranost in naloge Službe NMP v primeru množičnih nesreče ter primarno, sekundarno in nadaljnje triaže,
- univerzalni ABCDE pregled,
- pristop in nujno ukrepanje pri nediferenciranem življenjsko ogroženem bolniku oziroma otroku,
- pristop in nujno ukrepanje pri življenjsko ogroženem oziroma kritičnem poškodovancu na terenu ter priprava takega poškodovanca na transport v ustrezno bolnišnico,
- spremembe smernic temeljnih in dodatnih postopkov oživljanja odraslih, otrok in novorojenčkov,

Objectives and competences:

The objectives are to enable students to know and understand:

- organization of emergency medical services in Slovenia, and corresponding legislation related to emergency medicine,
- characteristics of helicopter EMS, and primary and secondary helicopter transports,
- organization and tasks of EMS in the case of mass casualty incidents, and primary, secondary and further triage,
- universal ABCDE survey,
- approach to and urgent interventions in undifferentiated critically ill adult or child,
- approach to and urgent interventions in critically ill or injured patient in prehospital area, and preparation of such patient for transport to an appropriate hospital,
- changes in the basic and advanced life support guidelines for adults, children, and new-borns,
- approach to the patient with undifferentiated chest

- pristop k bolniku z nediferencirano bolečino v prsih (začetni pristopi, kritične diferencialne diagnoze, diagnostične metode, začetno zdravljenje),
- pristop k bolniku z nediferencirano bolečino v trebuhu (začetni pristopi, kritične diferencialne diagnoze, nujne diagnostične metode, začetno zdravljenje),
- pristop k bolniku z nediferenciranim oteženim dihanjem (začetni pristopi, kritične diferencialne diagnoze, nujne diagnostične metode, začetno zdravljenje),
- pristop k bolniku z nediferencirano motnjo zavesti (začetni pristopi, kritične diferencialne diagnoze, nujne diagnostične metode, začetno zdravljenje),
- obravnavno bolnika s (hudo) poškodbo glave in možganov na terenu,
- najpogostejše zastrupitve po starostnih skupinah, klinične toksindrome ter začetno ukrepanje pri bolniku z domnevno zastrupitvijo (varni pristop, ABCDE pregled, simptomatska podpora, nujni antidoti).

Predvideni študijski rezultati:**Znanje in razumevanje:**

- organiziranost Službe NMP v Sloveniji,
- zakonodaje s področja nujne medicinske pomoči,
- organiziranost in lastnosti HNMP,
- organiziranost SNMP v primeru množičnih nesreč ter principov triaže,
- univerzalnega ABCDE pregleda,
- pristopa h kritično bolnemu oz. življenjsko ogroženemu odraslemu oz. otroku,
- pristopa h kritično oz. življenjsko ogroženemu poškodovancu na terenu,
- aktualnih temeljnih in dodatnih postopkov oživljanja odraslih, otrok in novorojenčkov,
- začetnega pristopa, kritičnih diferencialnih diagnoz, nujnih diagnostičnih metod in začetnega ukrepanja pri nediferenciranih bolnikih z bolečinami v prsih in trebuhu, oteženim dihanjem in motnjami zavesti,
- smernic in posebnosti pri obravnavi poškodovanca s hudo poškodbo glave in možganov na terenu oz. v urgentnem centru,
- najpogostejših zastrupitev v posameznih starostnih skupinah, vključno z začetnim pristopom.

Prenesljive/ključne spretnosti in drugi atributi:

- pregled kritično bolnega oziroma življenjsko ogroženega bolnika/otroka po principu ABCDE,
- izvedba nujnih posegov v sklopu primarnega pregleda ABCDE (oskrba dihalne poti, zdravljenje s kisikom, vzpostavitev znotrajžilnega dostopa in nadomeščanje tekočin, korekcija hipo- in hiperglikemije),
- aktivacija ustrezne ekipe NMP (MoEREA, MoENRV, HNMP) in drugih služb,
- izvedba primarne triaže na terenu po metodi SIEVE,
- pristop k poškodovancu na terenu po sistemu ITLS

- pain (initial approach, critical differential diagnosis, diagnostic methods, initial treatment),
- approach to the patient with undifferentiated abdominal pain (initial approach, critical differential diagnosis, diagnostic methods, initial treatment),
- approach to the patient with undifferentiated shortness of breath (initial approach, critical differential diagnosis, diagnostic methods, initial treatment),
- approach to the patient with undifferentiated altered mental status/level of consciousness (initial approach, critical differential diagnosis, diagnostic methods, initial treatment),
- approach to the patient with (severe) head and brain injury in prehospital area,
- most common intoxication or poisoning by age group, clinical toxindromes, and initial management of the patient with suspected or known intoxication (safe approach, ABCDE survey, symptomatic treatment, antidotes).

Intended learning outcomes:**Knowledge and understanding of:**

- organization of EMS in Slovenia,
- legislation related to emergency medicine,
- organization and characteristics of HEMS,
- organization of EMS in cases of mass casualty incidents, and principles of triage,
- universal ABCDE survey,
- approach to critically ill adult or child,
- approach to critically injured patients in prehospital area,
- current basic and advanced life support guidelines for adults, children, and new-borns,
- initial approach, critical differential diagnoses, diagnostic methods, and urgent interventions in patients with undifferentiated chest pain, abdominal pain, shortness of breath, and altered mental status/level of consciousness,
- guidelines and particularities when managing a patient with severe head and brain injury in prehospital area or emergency department,
- most common intoxication or poisoning in different age groups, including the initial approach.

Transferable/Key skills and other attributes:

- examination of critically ill or injured adult/child, according to ABCDE principle,
- performance of emergency interventions during the primary ABCDE survey (airway management, oxygen therapy, establishing IV access and fluid replacement, correction of hypo- and hyperglycemia),
- activation of appropriate EMS (MICU unit, ambulance, HEMS) and other services,
- execution of primary triage in prehospital area according to SIEVE method,

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ter začetni ukrepi in stabilizacija poškodovanca ter priprava na transport v ustrezno bolnišnico, • pristop k bolniku z bolečino v prsih na terenu ali urgentnem centru, • pristop k bolniku z bolečino v trebuhu na terenu ali urgentnem centru, • pristop k bolniku z dispnejo na terenu ali urgentnem centru, • pristop k bolniku z motnjo zavesti/sinkopo na terenu ali urgentnem centru, • pristop k bolniku z zastrupitvijo na terenu ali urgentnem centru, • pristop k poškodovancu s hudo poškodbo glave in možganov na terenu.	• approach to injured patient in prehospital area according to ITLS system, and initial interventions and stabilization of the injured, as well as preparation for transport to an appropriate hospital, • approach to the patient with chest pain in prehospital area or emergency department, • approach to the patient with abdominal pain in prehospital area or emergency department, • approach to the patient with shortness of breath in prehospital area or emergency department, • approach to the patient with altered mental status/level of consciousness in prehospital area or emergency department, • approach to the patient with intoxication or poisoning in prehospital area or emergency department, • approach to the patient with severe head and brain injury in prehospital area.
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Metode poučevanja in učenja:

Predavanja
Seminarji
Klinične vaje

Learning and teaching methods:

Lessons
Seminars
Practical work

Delež (v %) / Weight (in %)		Assessment:
Načini ocenjevanja:		
Način (pisni izpit, ustno izpraševanje, naloge, projekt): pisni izpit ustni izpit Pisni izpit je sestavljen iz 40 MCQ vprašanj v računalniški obliki, za katere je na voljo 60 minut. Ocena iz pisnega izpita se določi po naslednjem kriteriju: 37-40 točk: ocena 10; 34-37 točk: ocena 9; 29-33 točk: ocena 8; 25-28 točk: ocena 7; 21-24 točk: ocena 6; 20 točk ali manj: izpita ni opravil. Končna ocena se izračuna po formuli: $(0,5 \times \text{MCQ}) + (0,5 \times \text{ustni izpit})$, rezultat se zaokroži na eno decimalno mesto. V primeru, da ima končni rezultat decimalno končnico 0,5 ali več se ocena zaokroži navzgor, sicer pa navzdol. V primeru, da študent na pisnem izpitu doseže manj ali enako kot 25 točk, izpita iz predmeta ni opravil. V primeru, da je na ustnem izpitu ocenjen z manj kot 6, izpita ni opravil. ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV: Obvezna (100 %) prisotnost na seminarjih in kliničnih vajah. Pred vstopom na klinične vaje študent samostojno predela snov iz seminarjev in opravi pre-test na Moodle. Pre-test je	50 % 50 %	Type (written exam, oral examination, coursework, project): written exam oral examination Written exam consists of 40 MCQ in computerized format and is 60 minutes long. Written exam is graded as following: 37-40points: grade 10; 34-37 points: grade 9; 29-33 points: grade 8; 25-28 points: grade 7; 21-24 points: grade 6; 20 points or less: failed. Final grade is calculated as follows: $(0.5 \times \text{MCQ}) + (0.5 \times \text{oral examination})$. The result is rounded to one decimal place. Decimal results of the calculation will be rounded to the nearest whole number (0.5 or more is rounded up, less than 0.5 is rounded down). If a student gets 25 or less points at the written exam, he/she has failed the course. If a student does not get at least a grade 6 at the oral examination, he/she has failed the exam. ACADEMIC OBLIGATIONS OF STUDENTS: Obligatory (100 %) attendance at coursework and practical work. The student is obligated to

sestavljen iz dvajsetih MCQ vprašanj.		study the materials of the seminars before he enters the practical work and to fulfill the pre-test on Moodle. The pre-test is composed from 20 MCQ.
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Reference nosilca / Lecturer's references:

1. PETRAVIČ, 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://bmcmernmed.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](#)], [JCR, SNIP, WoS]
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](#)], [JCR, SNIP, WoS, Scopus]
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](#)], [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](#)], [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](#)], [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](#)], [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](#)], [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](#)], [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](#)], [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]
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](#)], [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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