Univerza v Mariboru

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Ime predmeta:	**Mehanizmi in biomehanika poškodb**
Course title:	**Mechanisms and Biomechanics of Injury in Trauma**

Študijski program in stopnja **Study programme and cycle**	**Študijska smer** **Study option**	**Letnik** **Year of study**	**Semester** **Semester**
Biomedicinska tehnologija/3. stopnja		**2**	**3 ali 4**
Biomedical Technology/3rd Degree			

Vrsta predmeta (obvezni ali izbirni) / **Course type (compulsory or elective)**	Izbirni Elective
Univerzitetna koda predmeta / University course code:	

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**			**Klinične vaje** **Clinical training**	**Druge oblike študija** **Other forms of study**	**Samost. delo** **Individual work**	**ECTS**
		10						
15	**20**	**AV**	**LV**	**RV**			**135**	**6**

Nosilec predmeta / Course coordinator:	Izr. prof. dr. Andrej Čretnik

Jeziki /Languages:	**Predavanja / Lectures:**	Slovenski/Slovenian
	Vaje / Tutorial:	Slovenski/Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites for enrolling in the course or for performing study obligations:**

Vsebina (kratek pregled učnega načrta):	**Content (syllabus outline):**
Predmet pokaže kako obravnava mehanizma in biomehanike poškodb lahko pomaga pri triaži in optimiziranju oskrbe poškodovanca. Predstavljen bo pregled biomehanike in odnosa med različnimi mehanizmi poškodb in kliničnimi vzorci poškodb in kako razumevanje le tega izboljša odkrivanje poškodb in komplikacij. Predmet predstavi aktualne ocenjevalne lestvice za poškodbe in uporabo istih. Predmet obsega: 1. Mehanizmi poškodb in triaža 2. Mehanizmi poškodb in vzorci poškodb a) Biomehanika topih poškodb b) Mehanizmi poškodb pri prometnih nesrečah (vozilo, kolesar, motorist, pešec) c) Mehanizmi poškodb pri padcih	The subject reviews how consideration of the mechanism of injury can assist in making triage decisions in order to optimize care and to determine the disposition of the trauma patient. The biomechanics of trauma will be reviewed. Examination will also be made of the relationship between various mechanisms of injury and clinical injury patterns in order to improve detection of injuries and anticipation of complications. The subject will be explain trauma scores and application in the work. The subject content: 1. Mechanism of injury and triage decisions 2. Patterns of injury and mechanism of injury a) Biomechanics of Blunt Trauma

d) Biomehanika in mehanizmi penetratnih poškodb (vbodne in strelne poškodbe) e) Eksplozivne poškodbe f) Termalne poškodbe 3. Ocenjevalne (točkovne) lestvice v travmi	b) Mechanisms of injury of traffic accidents (motor vehicle crashes, motorcycle and bicycle crashes, pedestrian) c) Mechanism of injury of falls d) Biomechanics and mechanisms of penetrating trauma (stab and gunshot wounds) e) Explosion injury f) Thermal injury 3. Trauma scoring
Temeljni literatura in viri / Reading materials:	
American College of Surgeons, Committee on Trauma. Advanced Trauma Life Support for Doctors, Student Course Manual, 10th Edition. Chicago: American College of Surgeons,2018. Mattox KL, Felicano DV, Moore EE eds. Trauma, 8th Edition, New York, McGraw-Hill, 2017. ISBN-13: 978-1259860676 Vincent, Jean Louis (ur.), et al. *Textbook of critical care*. 7th ed. Philadelphia: Elsevier. 2017. Smernice za delovanje sistema nujne medicinske pomoči ob množičnih nesrečah. Eds. Dujić D, Simčič B. Ljubljana: MZ; 2013. http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/kakovost/NMP_2013/mnozicne_nesrece/Smernice_NMP_mnozicne_tisk_2.pdf	
Cilji in kompetence:	**Objectives and competences:**
Uporaba načel biomehanike in mehanizmov poškodb pri delu z poškodovanci pri triaži kar prispeva izboljšanju predbolnišnične in bolnišnične oskrbe poškodovanca. Seznanjenost z obstoječimi točkovnimi- ocenjevalnimi lestvicami poškodb in kvalitetna uporaba le teh pri kvalitetni oskrbi poškodovanca. Epidemiološko raziskovanje poškodb in zbiranje podatkov. Nadzor nad poškodbo z zmanjšanjem umrljivosti, zbolevnosti in invalidnosti.	The application of principles of biomechanics and mechanisms of injury in work in trauma. The history of the traumatic event and the physical observations of the trauma scene by healthcare personnel may provide important information in the prehospital and hospital phases of patient care. Overview of existing trauma –scoring systems and state-of-art trauma scoring systems used for quality assessment. Injury epidemiology. Injury control with reduce injury mortality, morbidity and disability.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Uporaba mehanizmov, biomehanike poškodb in ocenjevalnih lestvic za hitro in uspešno triažo več poškodovanih, ocenjevanje stopnje prizadetosti in rizika resnih poškodb, spremljanje stanja poškodovanca in predvidevanje razpleta. Uporaba protokolov in sodelovanje pri zbiranju epidemioloških podatkov poškodovancev.	**Knowledge and understanding:** Application of mechanisms, biomechanics and trauma-scoring systems for immediately triage and they become an essential tool in trauma care management where they have been applied in examination of injury and the risk of serious injury, outcome evaluation, quality assessment, and resource allocatio. Using of protocols and collecting of data for trauma epidemiology.
Prenosljive/ključne spretnosti in drugi atributi: Monitoring, tehnike proste venske poti, endotrahealna intubacija, kapnografija, odčitavanje EKG-a, uporaba medikamentov v urgentnih situacijah(volumna resuscitacija, inotropi, vazoaktivna terapija) hitra sekvenčna intubacija, tehnike predihavanja, torakalna drenaža, perikardiocenteza, osnove imobilizacije, uporaba točkovnih lestvic. Reševanje scenarija po načelu PBL (problem basic learning)	**Transferable/key competences and other abilities:** Monitoring, intravenous access, endotracheal intubation, capnography, electrocardiography and cardiac monitoring, drugs in emergencies (volume resuscitations, inothropes, vasopressors), rapid sequence intubation, ventilatory management, chest tube insertion, pericardiocentesis, fundamentals of immobilisation, applications of soring-systems in trauma. PBL scenaries.
Metode poučevanja in učenja:	**Learning and teaching methods:**

Predavanja Seminarji Vaje (Simulacijski center, samostojno projektno seminarsko delo izbranih poglavji, PBL, ogled in delo na instrumentih) Samostojno delo	Lectures Seminars Tutorial (laboratory work in Centre of simulation, project seminar, PBL, observation and work with instruments) Individual work

Načini ocenjevanja:	**Delež (v %) / Share (in %)**	**Assessment methods:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
Seminarska naloga	**50 %**	Seminar paper
Ustni izpit	**50 %**	Oral exam

Reference nosilca / Course coordinator's references:

ČRETNIK, Andrej, FEKONJA, Anita. The use of selective laser melting in mandibular retrognathia correction. Metals. Sep. 2022, vol. 12, issue 9, str. [1]-10, ilustr. ISSN 2075-4701. https://doi.org/10.3390/met12091544, https://www.mdpi.com/2075-4701/12/9/1544, DOI: 10.3390/met12091544. [COBISS.SI-ID 122131203], [JCR, SNIP, WoS, Scopus], kategorija: 1A2 (Z, A1/2); uvrstitev: SCIE, Scopus, MBP (INSPEC, METADEX, DOAJ); tip dela je verificiral OSICM točke: 46.9, št. avtorjev: 2

FEKONJA, Anita, ZUPANČIČ HARTNER, Tjaša, ČRETNIK, Andrej. Mandibular retrognathia correction using a fixed sagittal guidance appliance individually manufactured by selective laser melting manufacturing technology. Rapid prototyping journal. 2018, vol. 24, issue 2, str. 416-423, ilustr. ISSN 1758-7670. https://www.emeraldinsight.com/eprint/YGJU9TTN4CPRZ4V97ZDM/full, https://doi.org/10.1108/RPJ-10-2016-0163, DOI: 10.1108/RPJ-10-2016-0163. [COBISS.SI-ID 6318911], [JCR, SNIP, WoS do 26. 10. 2022: št. citatov (TC): 3, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0,33, Scopus do 13. 10. 2022: št. citatov (TC): 2, čistih citatov na avtorja (CIAu): 0,00], kategorija: 1A2 (Z, A1/2); uvrstitev: SCIE, Scopus, MBP (INSPEC, COMPENDEX, PUBMED); tip dela je verificiral OSICM točke: 33.06, št. avtorjev: 3

LAUFER, Kevin, PETEK, Karina, RAKUŠA, Sofia, RAKUŠA, Matej, RAKUŠA, Martin, ČRETNIK, Andrej. Traumatic brain injury during the SARS-CoV-2 pandemics in Slovenia : a single center study. Journal of clinical medicine. 2022, vol. 11, issue 23, str. [1]-10. ISSN 2077-0383. https://doi.org/10.3390/jcm11237017, https://www.mdpi.com/2077-0383/11/23/7017, DOI: 10.3390/jcm11237017. [COBISS.SI-ID 131184899], [JCR, SNIP, WoS, Scopus], financer: Financer: University Medical Center Maribor, kategorija: 1A2 (Z, A1/2); uvrstitev: SCIE, Scopus, MBP (DOAJ, PUBMED); tip dela je verificiral OSICM točke: 15.15, št. avtorjev: 6