Univerza v Mariboru

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

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:	Izr. prof. dr. Andrej Čretnik

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenščina, angleščina/ slovene, english
	Vaje / Tutorial:	Slovenščina, angleščina/ slovene, english

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):**
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 d) Biomehanika in mehanizmi penetratnih poškodb (vbodne in strelne poškodbe) e) Eksplozivne poškodbe f) Termalne poškodbe 3. Ocenjevalne (točkovne) lestvice v travmi	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 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 / Readings:

- Soreide E, Grande MC (eds), Prehospital Trauma Care, Markel Dekker, Inc., New York, 2001
- American College of Surgeons, Committee on Trauma. Mechanisms of Injury and Relate suspected Injury Patterns. In: Advanced Trauma Life Support for Doctors, Student Course Manual, 7th Edition. Chicago: american College of Surgeons,2004.
- Mattox KL, Felicano DV, Moore EE (eds. Trauma, 4 th Edition, New York, McGraw-Hill, 2000.
- Nahum AM, Melvin J (eds). The Biomechanics of Trauma. Norwalk, CT, Appleton-Century-Crofts, 1985.
- 5.Vincent JL (ed). 2004 Yearbook of Intensive Care and Emergency Medicine, Springer Verlag Berlin, 2004.
- Vincent JL (ed.) 2005 Yearbook of Intensive Care and Emergency Medicine, Springer Verlag, Berlin 2005.
- Najnovejši prispevki iz Shock, Chest, Intensive Medicine Care, Critical Care, Critical Care Medicine, Journal of Trauma, Injury

Cilji in kompetence:

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.

Objectives and competences:

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:

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.

Prenesljive/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)

Intended learning outcomes:

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.

Transferable/Key Skills and other attributes:
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:

Predavanja, vaje v Simulacijskem centru, samostojno projetno seminarsko delo izbranih poglavji, PBL, ogled in delo na instrumentih,

Learning and teaching methods:

Lectures, laboratory work in Centre of simulation, project seminar, PBL, observation and work with instruments

Načini ocenjevanja:	**Delež (v %) / Weight (in %)**	**Assessment:**
– projektna seminarska naloga z javno predstavitvijo in – ustni izpit.		– Project seminar – coursework with public demonstration, – oral examination