Univerza v Mariboru

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Uporabna molekularna imunologija v klinični praksi**
Course title:	**Applications of Molecular Immunology in Clinical Practice**

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:	Prof. dr. Ivan Krajnc Prof. dr. Uroš Potočnik

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

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):**
Teorija: Splošne teme - analiza ekspresijskih profilov citokinov… - biološka zdravila ciljana na citokine in druge imunske molekule - vzorci citokinov v imunskih boleznih - genski polimorfizmi citokinov pri kompleksnih (multifaktorskih) boleznih - bioinformatika v raziskavah genetike citokinov - citokinski receptorji in antagonisti - genetika kemokinov in receptorjev za kemokine - prenos signalov (signalna transdukcija) preko citokinskih receptorjev - citokini in imunologija tumorjev-povezava z genetsko nestabilnostjo pri raku - uporaba mišjih modelov z izbitim tarčnim genom v imunoloških raziskavah Praktični del: - ELISA - ELISPOT - FACS - Kvantitativni PCR v realnem času - Imunohistokemija - cDNA in oligo DNA mikromreže (biočipi) - tehnologije za gensko tipizacijo DNA polimorfizmov	Theory: General themes - analysis of cytokine expression explorative vs. biased approaches - cytokine-based therapies in disease - cytokine patterns in inflammatory diseases - cytokine Gene Polymorphisms in Multifactorial Conditions - bioinformatic Resources for Cytokine Genetics Research - cytokine receptors and antagonists - genetics of chemokines and chemokine receptors - signal transduction through cytokine receptors - cytokines and tumor immunology, genetic instability in cancer - use of Gene-Targeted Knock Out Mice in Immunological Research Practical: - ELISA - ELISPOT - FACS - Real Time – PCR - Immunohistochemistry - cDNA and oligo DNA arrays ((biochips) - technologies including RFLP and Taqman for Genotyping of Single Nucleotide Polymorphisms (SNPs) in genes for

enega samega nukleotida (ang SNP) v genih imunskega odziva (citokini, kemokini, receptorji, HLA)	cytokines, cytokine receptors, chemokines, chemokine receptors, HLA

Temeljni literatura in viri / Readings:

- Koen Vandenbroeck., editor. Cytokine Gene Polymorphisms in Multifactorial Conditions ISBN: 0849336198. Florida CRC press; 2006
- Abbas, Abul K., and Andrew Lichtman. Cellular and Molecular Immunology. 6th ed. Philadelphia, PA: Saunders, 2005. ISBN: 1416023895.
- Immunobiology-The Immune System in Health and Disease", by C.A. Janeway, Jr. et al., 4th edition, Current Biology Ltd & Garland Publishing, Inc., 1999
- Rosen, Fred, and Raif Geha. Case Studies in Immunology: A Clinical Companion. 4th ed. New York, NY: Garland Pub., 2004. ISBN: 0815341024. (Paperback)

Cilji in kompetence:	**Objectives and competences:**
Poglobljeno razumevanje strukture, genetike, funkcije in detekcije citokinov in drugih molekul pomembnih v imunoloških sistemih s posebnim poudarkom na pomenu v patogenezi in uporabi v terapiji.	To provide a broad understanding of the structure, genetics, function and detection of cytokines and other molecules important in immunological systems, with particular reference to their involvement in disease pathogenesis and use in therapy.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Osvojeno pregledno interdisciplinarno znanje o bioloških zdravilih, ciljanih na citokine in druge imunske molekule, o vzorcih citokinov v imunskih boleznih, o bioinformatiki v raziskavah genetike citokinov, o citokinski receptorjih in antagonistih, o genetiki kemokinov in receptorjih za kemokine, o prenosu signalov (signalna transdukcija) preko citokinskih receptorjev, o imunologiji tumorjev-povezava z genetsko nestabilnostjo pri raku **Prenesljive/ključne spretnosti in drugi atributi:** Sposobnost vključitve v poglobljeno raziskovalno delo z namenom nadaljevanja doktorskega študija in izdelave doktorata na različnih problemih biomedicine.	**Knowledge and understanding:** Broad interdisciplinary knowledge of structure and function of cytokine-based therapies in disease, cytokine patterns in inflammatory diseases, bioinformatic Resources for Cytokine Genetics Research, cytokine receptors and antagonists, genetics of chemokines and chemokine receptors, signal transduction through cytokine receptors, cytokines and tumor immunology, genetic instability in cancer **Transferable/Key Skills and other attributes:** Ability of a student to be involved deeply in research in order to continue his/her doctoral studies leading to PhD thesis on various problems from biomedicine.
Metode poučevanja in učenja:	**Learning and teaching methods:**
Poudarek bo na poglabljanju in povezovanju teoretičnega znanja s praktičnim in laboratorijskim delom. Teoretični del bo potekal v obliki predavanj in delavnic, kjer bodo izbrane tematike obravnavane problemske tematike v okviru delavnic z diskusijskimi skupinami iz 2 ali 3 študentov. Laboratorijske metode za določanje in analizo citokinov in drugih pomembnih imunoloških molekul na kliničnih in eksperimentalnih vzorcih.	The course is based on two complementary theoretical and practical themes. The theoretical side will be in the form of lectures and discussion groups covering specific topics, with small research assignments for groups of 2-3students to present both orally and written as a short report. The practical side will incorporate training in specific cytokine detection methods using samples provided from clinical/experimental settings.

Načini ocenjevanja:	**Delež (v %) / Weight (in %)**	**Assessment:**
– seminar in – ustni izpit		– seminar and – oral examination