**Medicinski fakultet**

**IZMJENE I DOPUNE STUDIJSKOG PROGRAMA**

Translacijska istraživanja u biomedicini - TRIBE

SPLIT, listopad 2020

OPĆE INFORMACIJE O STUDIJSKOM PROGRAMU

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| --- | --- | --- | --- | --- |
| Prvotni naziv studijskoga programa | Translacijska istraživanja u biomedicini - TRIBE | | | |
| Novi naziv studijskoga programa | Naziv se ne mijenja | | | |
| Nositelj studijskoga programa | Medicinski fakultet u Splitu | | | |
| Suizvođač/i studijskoga programa | / | | | |
| Vrsta studijskoga programa | Stručni studijski program | | Sveučilišni studijski program | |
| Razina studijskoga programa | Preddiplomski | Diplomski | | Integrirani |
| Poslijediplomski sveučilišni | Poslijediplomski specijalistički | | Diplomski specijalistički |
| Akademski/stručni naziv koji se stječe po završetku studija | Doktor znanosti (dr.sc.) | | | |
| Ukupni broj ECTS bodova | 180 | | | |
| Ukupni broj ECTS bodova predmeta u kojima je došlo do promjene | 30 ECTS u obaveznim predmetima | | | |
| Procjena postotka izmjena i dopuna studijskog programa | Manje od 20%  Više od 20%, manje od 40%  Više od 40% | | | |
| Redni broj izmjene i dopune studijskog programa | Radi se o prvoj izmjeni studijskog programa nakon posljednje akreditacije. | | | |
| Odluka fakultetskog vijeća o prihvaćanju izmjena i dopuna (dostaviti u prilogu) | | | | |
| Preslika dopusnice za studijski program (dostaviti u prilogu) | | | | |

Popis predmeta u kojima je napravljena izmjena i/ili dopuna

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Semestar | Predmet | ECTS prije | ECTS poslije | Izmjena (navesti u čemu je izmjena) |
| 3-4 | IZBORNI PREDMET: Avanture osjeta boli u mozgu | 2 | 2 | Ukinut |
| 3-4 | IZBORNI PREDMET: Komunikacije u živim organizmima | 2 | 2 | Ukinut |
| 3-4 | IZBORNI PREDMET: Metode izolacije bioaktivnih tvari | 2 | 2 | Ukinut |
| 3-4- | IZBORNI PREDMET: Sustavni pregledi i meta analize | 2 | 2 | Ukinut |
| 3-4 | IZBORNI PREDMET: Communication standards for manuscript submission to a scientific journal |  | 2 | Novi izborni predmet |
| 3-4 | IZBORNI PREDMET: Writing a doctoral thesis |  | 3 | Novi izborni predmet |
| 3-4 | IZBORNI PREDMET: The science of breastfeeding and lactation |  | 3 | Novi izborni predmet |
| 3-4 | IZBORNI PREDMET: A step-by-step guide to conducting a systematic review |  | 3 | Novi izborni predmet |
| 3-4 | IZBORNI PREDMET: The plasticity of the neurochemical phenotype |  | 2 | Novi izborni predmet |
| 1-2 | OBAVEZNI PREDMET: Principles of research in biomedicine | 20 | 20 | Promjena satnice |
| 1-2 | OBAVEZNI PREDMET: Transferable skills | 10 | 10 | Promjena satnice |
| 3-4 | IZBORNI PREDMET: How to choose a scientific journal? | 2 | 3 | Promjena satnice i ECTS bodova |
| 3-4 | IZBORNI PREDMET: How to construct your own organ? | 2 | 3 | Promjena satnice i ECTS bodova |
| 3-4 | IZBORNI PREDMET: The puzzle of pain | 2 | 3 | Promjena satnice i ECTS bodova |
| 3-4 | IZBORNI PREDMET: Seeing the invisible | 2 | 3 | Promjena satnice i ECTS bodova |
| 3-4 | IZBORNI PREDMET: Quasi-experimental and non-experimental research methods | 2 | 3 | Promjena satnice i ECTS bodova |
| 3-4 | IZBORNI PREDMET: The Cochrane Library and evidence in medicine | 2 | 3 | Promjena satnice i ECTS bodova |

Opis novog predmeta ili predmeta koji je nadopunjen i izmijenjen

[Obavezni predmeti *(promjena satnice)* 4](#_Toc52965205)

[1. Principles of research in biomedicine (Principi istraživanja u biomedicini) 4](#_Toc52965206)

[2. Transferable skills in biomedicine (Prenosive vještine) 10](#_Toc52965207)

[Novi izborni predmeti 15](#_Toc52965208)

[1. Communication standards for manuscript submission to a scientific journal (Standardi komunikacije tijekom slanja rukopisa u znanstveni časopis) 15](#_Toc52965209)

[2. Writing a doctoral thesis (Pisanje doktorske disertacije) 18](#_Toc52965210)

[3. The science of breastfeeding and lactation (Nove znanstvene spoznaje o laktaciji i dojenju) 20](#_Toc52965211)

[4. A step-by-step guide to conducting a systematic review (Praktični koraci u izradi sustavnog pregleda) 24](#_Toc52965212)

[5. The plasticity of the neurochemical phenotype (Plasticitet neurokemijskog fenotipa) 27](#_Toc52965213)

[Izborni predmeti *(promjena satnice i ECTS bodova)* 29](#_Toc52965214)

[1. How to choose a scientific journal? (Kako odabrati znanstveni časopis?) 29](#_Toc52965215)

[2. How to construct your own organ? (Kako napraviti vlastiti organ?) 32](#_Toc52965216)

[3. The Puzzle of Pain (Zagonetka boli) 35](#_Toc52965217)

[4. Seeing the invisible (Gledanje nevidljivog) 37](#_Toc52965218)

[5. Quasi-experimental and non-experimental research methods (Kvazieksperimentalne i neeksperimentalne metode istraživanja) 39](#_Toc52965219)

[6. The Cochrane Library and evidence in medicine (Cochrane knjižnica i dokazi u medicini) 42](#_Toc52965220)

# Obavezni predmeti

## 1. Principles of research in biomedicine (Principi istraživanja u biomedicini)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Naziv predmeta** | | | **Principi istraživanja u biomedicini** | | | | | | | | | | |
| **Kod** | PT-OP11 | | Godina studija | | | | | TRIBE, 1. godina | | | | | |
| **Nositelj/i predmeta** | Prof.dr.sc. D. Sapunar | | Bodovna vrijednost (ECTS) | | | | | 20 | | | | | |
| Suradnici | Prof.dr.sc. A. Marušić  Prof.dr.sc. I. Grković  Prof.dr.sc. L. Puljak  Prof.dr.sc. O. Polašek  Prof.dr.sc. A. Jerončić  Dr.sc. I. Buljan  Dr.sc. L. Barać  A. Utrobičić, prof., dipl. knjiž. | | Način izvođenja nastave (broj sati u semestru) | | | | | P | S | | V | | T |
| 58 | 78 | | 14 | | 150 |
| Status predmeta | Obavezni | | Postotak primjene e-učenja | | | | | 20% | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | |
| Ciljevi predmeta | Cilj predmeta je upoznati studente s općim načelima istraživanja u biomedicini i metodama prikupljanja, analiziranja i prezentiranja podataka o istraživanju kako bi bili sposobni samostalno prirediti dobar prijedlog teme doktorske disertacije. | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema ih | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | **Uvod u znanstveno istraživanje:** Nakon položenog predmeta student će moći: razumjeti izvore i putove stvaranja izvornog znanja; prepoznati vrste kliničkih istraživačkih studija; formulirati hipotezu i uzastopno definirati glavne i sekundarne mjere ishoda; tražiti specifičnu literaturu u relevantnim bazama podataka; kritički procijeniti sve dijelove izvještaja o istraživanju; razumjeti i primijeniti osnovne statističke pojmove u biomedicinskim istraživanjima; predstaviti podatke s obzirom na njihovu prirodu i značenje; razumjeti principe medicine utemeljene na dokazima i njezine uporabe; razumjeti složenost izvođenja vlastitih istraživanja i primijeniti principe odgovornog provođenja istraživanja.  **Pretraživanje medicinske literature:** Nakon završetka tečaja student će moći: navesti i opisati glavne izvore medicinskih informacija; definirati strategiju pretraživanja; analizirati publikacije pojedinih znanstvenika; provesti pretragu unutar glavnih baza podataka; definirati principe medicine utemeljene na dokazima.  **Pisanje istraživačkog rukopisa:** Nakon završetka tečaja student će moći: opisati strukturu istraživačkog članka; samostalno napisati znanstveni članak; demonstrirati upotrebu softvera za upravljanje referencama EndNote i Mendeley; samostalno koristiti mrežne sustave za prijavu rukopisa i samostalno pripremiti brojku za predaju rukopisa.  **Ocjenjivanje istraživačkog članka:** Nakon završetka tečaja student će moći: kritički ocjenjivati publikacije; neovisno razlikovati vjerodostojne od loših izvora istraživačkih informacija; samostalno procijeniti valjanost i pouzdanost procjene rezultata istraživanja; samostalno analizirati rizik od pristranosti u istraživanju.  **Prikupljanje sredstava i pisanje istraživačkih projekata:** Nakon završetka tečaja student će moći: razumjeti osnovne koncepte prijedloga istraživanja, važnost supervizora (voditelja projekta) i optimalno okruženje za istraživanje; razlikovati razne formate prijedloga projekata; razumjeti postupak evaluacije različitih komponenata projekta; analizirati i usporediti različite dijelove prijedloga projekta; razgovarati o važnosti sažetka; razumjeti tijelo prijedloga; razumjeti i uvažiti vremenska ograničenja i oblikovati preduvjet u pisanju prijedloga.  **Opća biostatistika:** Nakon završetka tečaja student će biti sposoban: razumjeti i opisati osnove statističkog zaključivanja; objasniti rezultate statističke analize; razumjeti upotrebu, prednosti i nedostatke određenih statističkih metoda; primijeniti algoritam za odabir statističkih testova; primijeniti metode za određivanje veličine uzorka i statističke snage studije; sintetizirati znanje o dizajnu studija; samostalno koristiti statističke pakete; predstaviti statističke aspekte rezultata istraživanja; kritički ocjenjuju statističke metode korištene u znanstvenim člancima.  **Upravljanje laboratorijem i znanost o životinjama:** Nakon završetka tečaja student će biti sposoban: razumjeti zakonodavstvo i osnovna načela laboratorijskog rada; upravljati ljudskim resursima; opisati i definirati postupke potrebne za siguran laboratorijski rad; opisati postupak planiranja eksperimenta; opisati osnovnu laboratorijsku opremu; koristiti laboratorijsku bilježnicu; imenovati i objasniti zakonodavstvo uključeno u stjecanje, njegu i upotrebu životinja u znanstvenim istraživanjima; opisati i objasniti metode rukovanja laboratorijskim životinjama; opisati postupke za planiranje pokusa u kojima će se koristiti laboratorijske životinje; definirati, opisati i objasniti 3R principe (smanjiti, zamijeniti, pročistiti); kritički analizirati osnovna etička načela i etička pitanja koja proizlaze iz upotrebe laboratorijskih životinja u istraživanju; imenovati i opisati životinje koje se najčešće koriste u znanstvenim istraživanjima; opisati, diskriminirati i objasniti metode anestezije i eutanazije laboratorijskih životinja  **Pisanje plana istraživanja**: Nakon završetka tečaja student će moći samostalno pripremiti plan istraživanja, s 20 točno definiranih elemenata: 1. Naslov istraživačkog projekta; 2. Pozadina; 3. Hipoteza; 4. Opis i dizajn studije; 5. Uzorak; 6. Metode i postupci; 7. Glavne neovisne varijable; 8. Liječenje / intervencija; 9. Glavna mjera (e) ishoda; 10. Sekundarne mjere (mjere) ishoda; 11. Proračun minimalne veličine uzorka; 12. Statistički testovi; 13. Moguće pristranosti i zbunjujuće varijable; 14. valjanost studije; 15. Etičko odobrenje; 16. Financiranje istraživanja; 17. Sukob interesa; 18. Literatura (reference); 19. Plan objave; 20. Autorstvo. | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | **Uvod u znanstvena istraživanja:** Stjecanje izvornog znanja; Načela znanstvenog istraživanja i odgovorno provođenje istraživanja; Vrste istraživanja u medicini; Osnovni nacrti studija; Oblikovanje hipoteze; Određivanje mjera ishoda; Zbunjujuće varijable; Veličina uzorka; Načela statističke analize; Medicina utemeljena na dokazima; Registracija studija; Strategije pretraživanja literature; Test kritičke procjene (CAT) objavljenih studija.  **Pretraživanje medicinske literature:** Osnovne značajke baza podataka; Vrste baza podataka; Pregled dostupnih baza podataka; Principi medicine utemeljene na dokazima; Traženje kliničkih dokaza; PICO; Skraćivanje i zamjenski znakovi; Operateri; Kontrolirani rječnik; MeSH struktura; Postavljanje strategije pretraživanja; Kombiniranje tekstualnih riječi i naslova predmeta; Pretraživanje baza podataka putem različitih platformi: PubMed i OvidSP; Pretraživanje baza podataka putem različitih platformi: Web of Science, Scopus, EBSCOhost; Postavljanje strategije pretraživanja na zadanu temu za Ovid MEDLINE.  **Pisanje znanstvenog članka:** Standardi u znanstvenom objavljivanju; Smjernice za izvještavanje za određene nacrte studija; Prijava istraživačkih studija; CONSORT lista; Struktura znanstvenog članka; EQUATOR smjernice; Priprema članka prema uputama za autore; Praktični rad u sustavima za slanje radova u časopise; Komunikacija s redakcijom; Postupci nakon prihvaćanja članka; Priprema slika za članak.  **Evaluacija znanstvenog članka:** Znanstvena literatura; Kritička ocjena članka; Analiza kvalitete istraživanja, valjanosti, pouzdanosti, relevantnosti i veličine učinka; Medicinski časopisi; Medicina utemeljena na dokazima; Metaanaliza; Sustavni pregledi; Recenzijski postupak; Odgovor na komentare recenzenta.  **Prikupljanje sredstava i pisanje istraživačkih projekata:** Uspješne projektne prijave u biomedicini; Od ideje do naslova i sažetka; Rasprava o pojedinačnim idejama i prijedlozima kako ih poboljšati; Stvaranje hipoteza na temelju literature (kritička procjena literature i stvaranje 2-3 radne hipoteze); Postupci, protokoli i planovi (kritičko promišljanje i pisanje detaljnog plana istraživanja vezano uz precizne vremenske granice); Ciljevi, primjena i očekivani rezultati (rasprava o očekivanim rezultatima i potencijalima njihove praktične primjene i komercijalizacije); Pridružena administracija (troškovnici, plan prezentacije i diseminacija rezultata).  **Opća biostatistika:** Pregled statistike; Deskriptivne statističke metode; Analitičke statističke metode; Kritička procjena - studija slučaja; Rasprava o studentskim istraživačkim temama; Praktični rad- opisna analiza; kategorijski podaci; numerički podaci; regresija i napredne analitičke metode; Kvantitativna metaanaliza, Bayesova statistika; Statistički savjeti; Načela kvalitativnog istraživanja i kvalitativne metasinteze; Statistička i klinička važnosti, ishodi usmjereni ka pacijentu.  **Upravljanje laboratorijem i znanosti o laboratorijskim životinjama;** GLP - dobra laboratorijska praksa; Sigurnost u laboratoriju; Uvod u znanost o laboratorijskim životinjama; Odgovorna uporaba laboratorijskih životinja, Princip 3R i alternative korištenju pokusnih životinja; Zakonodavstvo i propisi o pokusnim životinjama; Strukovna društva i organizacije za zaštitu životinja; Mali sisavci kao pokusne životinje, Nomenklatura sojeva miša i štakora; Životinjski modeli i njihova translacijska vrijednost; Bol i stres u pokusnih životinja; Ispitivanje ponašanja  **Pisanje plana istraživanja:** Individualni rad sa studentima | | | | | | | | | | | | |
| Vrste izvođenja nastave: | predavanja, seminari i vježbe | | | | | | | ☐ ☐       (ostalo upisati) | | | | | |
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| Obveze studenata | Nazočnost na nastavi | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave | 19 | |  |  |  | | | | | |  | |
| Seminarski rad |  | |  |  | (Ostalo upisati) | | | | | |  | |
| Pismeni ispit | 1 | |  |  | (Ostalo upisati) | | | | | |  | |
|  |  | |  |  | (Ostalo upisati) | | | | | |  | |
|  |  | |  |  | (Ostalo upisati) | | | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Pisani ispit | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | | | |
| * Marušić M, ur. Uvod u znanstveni rad u medicini. Zagreb: Medicinska naklada; 2019. * Wager E. Getting Research Published: An A-Z of Publication Strategy. CRC Press, 2015. * Ferenczi E, Muirhead N. Statistika i epidemiologija u jednom potezu. Zagreb: Medicinska naklada; 2011. * Day RA, Gastel N. How to write and publish a scientific paper, 6th edition. Westport (CT): Greenwood Press; 2006. * Lefebvre C, Manheimer E, Glanville J.  Chapter 6: Searching for studies. In: Higgins JPT, Green S (editors). Cochrane handbook for systematic reviews of interventions Version 5.1.0 (updated March 2011). The Cochrane Collaboration; 2011. * McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS Peer Review of Electronic Search Strategies: 2015 guideline statement. J Clin Epidemiol. 2016;75:40-6. * Lang T, Secic M. How To report statistics in medicine: annotated guidelines for authors, editors, and reviewers, 2nd edition. Philadelphia (PA): American College of Physicians; 2006. * Centre for health evidence. Users' guides to evidence-based practice. * Ball C. The evidence based clinician: part 1, asking answerable questions. Student BMJ 2002;10:313-4. * The First-Time Grantwriter's Guide to Success, by Cynthia R. Knowles, Corwin Press, 2002, ISBN 0761945369. * Grant Application Writers Handbook by Liane Reif-Lehrer, Jones and Bartlett Publishers, 2004, ISBN 0763716421. * Petrie A, Sabin C. Medical Statistics at a Glance. Blackwell Publishing, treće izdanje, 2009. * Kirkwood BR: Essentials of medical statistics. Blackwell Scientific Publications, Oxford, 1992. * National Research Council. Guide for the Care and Use of Laboratory Animals. National Academy Press; 1996; Washington. Institute for Laboratory Animal Research (ILAR) web resources * Barker K. At the Bench: A Laboratory NavigatorAt the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2005. * Making the Right Moves: A Practical Guide to Scientifıc Management for Postdocs and New Faculty. Burroughs Wellcome Fund and Howard Hughes Medical Institute, 2006. ([*http://www.hhmi.org/labmanagement*](http://www.hhmi.org/labmanagement)*)* * Barker K. At the Bench: A Laboratory Navigator At the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2005. | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | | | |
| Dopunska literatura | Dodatni nastavni materijali koje je pripremio nastavnik. | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **Principles of Research in Biomedicine** | | | | | | | | | | | |
| **Code** | PT-OP11 | | | | Year of study | | | | TRIBE, 1st year | | | | |
| Course teacher | Prof. D. Sapunar | | | | Credits (ECTS) | | | | 20 | | | | |
| Associate teachers | Prof.dr.sc. A. Marušić  Prof.dr.sc. I. Grković  Prof.dr.sc. L. Puljak  Prof.dr.sc. O. Polašek  Prof.dr.sc. A. Jeroničić  Dr.sc. I. Buljan  Dr.sc. L. Barac  A. Utrobičić, prof., dipl. knjiž. | | | | Type of instruction (number of hours) | | | | L | S | | E | T |
| 58 | 78 | | 14 | 150 |
| Status of the course | Mandatory | | | | Percentage of application of e-learning | | | | 20% | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | |
| Aims of the course | The goal of this course is to introduce students to general principles of research and methods of collecting, analyzing, and presenting and publishing research data, with an overall purpose to help them develop a good proposal of doctoral dissertation topic. | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | **Introduction to scientific research:** After completing the course, a student will be able to: understand the sources and paths of production of genuine knowledge; recognize types of clinical research studies; formulate hypothesis and consecutively define main and secondary outcome measures; search for specific literature in relevant databases; critically appraise all parts of research reports; understand and apply the basic statistical concepts in biomedical research; present data with respect to their nature and meaning; understand the principles of evidence-based medicine and its use; understand the complexity of performing own research and apply principles of responsible conduct of research.  **Searching medical literature:** After completing the course, a student will be able to: list and describe the main sources of medical information; define the search strategy; analyze the publications of individual scientists; implement the search within the main databases; define the principles of evidence-based medicine.  **Writing research manuscript:** After completing the course, a student will be able to: describe the structure of research article; independently write the scientific article; demonstrate usage of the EndNote and Mendeley reference manager software; independently use online manuscript submission systems, and independently prepare a figure for manuscript submission.  **Assessment of a research article:** After completing the course, a student will be able to: critically evaluate publications; independently differentiate credible from poor sources of research information; independently make assessment of validity and reliability of research result assessments; independently analyze risk of bias in research.  **Fundraising and writing the research grant:** After completing the course, a student will be able to: understand basic concepts of research proposal, importance of the supervisor (project leader) and optimal research surroundings; distinguish various formats of project proposals; understand process of evaluation of various project components; analyze and compare various parts of project proposal; discuss importance of the summary; understand the body of the proposal; understand and appreciate time constraints and format prerequisite in writing of the proposal.  **General biostatistics:** After completing the course, student will be able to: understand and describe the basics of statistical reasoning; explain the results of statistical analysis; understand the use, advantages and disadvantages of certain statistical methods; apply the algorithm for the choice of the statistical tests; apply the methods for determining the sample size and statistical power of the study; synthesize knowledge of the study design; independently use statistical packages; present statistical aspects of the research results; critically evaluate statistical methods used in scientific articles.  **Lab management and laboratory animal science:** After completing the course, a student will be able to: understand the legislation and basic principles of laboratory work; manage human resources; describe and define procedures necessary for the safe laboratory work; describe experiment planning procedure; describe basic laboratory equipment; use laboratory notebook; name and explain the legislations involved in acquiring, care and use of animals in scientific research; describe and explain the methods for handling laboratory animals; describe the procedures for planning the experiments in which laboratory animals will be used; define, describe and explain the 3R principles (reduce, replace, refine); critically analyze the basic ethical principles and ethical issues arising from the use of laboratory animals in research; name and describe the animals most frequently used in scientific research; describe, discriminate and explain the methods for anesthetizing and euthanizing the laboratory animals  **Writing the research plan:** After completing the course, a student will be able to independently prepare a research plan, with 20 precisely defined elements: 1. Title of the research project; 2. Background; 3. Hypothesis; 4. Description and design of the study; 5. Sample; 6. Methods and procedures; 7. Main independent variables; 8. Treatment/intervention; 9. Main outcome measure(s); 10. Secondary outcome measure(s); 11. Calculation of the minimal sample size; 12. Statistical tests; 13. Possible biases and confounding variables; 14. Validity of the study; 15. Ethical approval; 16. Financing of the research; 17. Conflict of interest; 18. Literature (references); 19. Publication plan; 20. Authorship. | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | **Introduction to scientific research:** Acquisition of the genuine knowledge; Principles of scientific research and responsible conduct of research; Types of research in medicine; Basic study designs; Formulation of the hypothesis; Determination of outcome measures, confounding variables; Sample size; Principles of statistical analysis; Evidence based medicine; Study pre-registration; Literature search strategies; Critical assessment test (CAT) of published studies.  **Searching the Medical Literature:** Basic features of databases; Types of databases; Overview of available databases; Principles of evidence-based medicine; Searching for clinical evidence; PICO; Truncation and wildcards; Operators; Controlled vocabulary; MeSH structure; Setting up a search strategy; Combining text words and subject headings; Searching databases via different platforms: PubMed and OvidSP; Searching databases via different platforms: Web of Science, Scopus, EBSCOhost; Setting up a search strategy on a given topic for Ovid MEDLINE.  **Writing Research Manuscript:** Standards in scientific publishing; Reporting guidelines for specific study designs; Registration of research studies; CONSORT flow diagram, CONSORT checklist; Structure of the scientific article, EQUATOR guidelines; Preparation of the article according to the instructions for authors; Practical work in electronic submission systems; Communication with the editorial office; Procedures after acceptance of the article; Preparation of the figures for article  **Assessment of Research Article:** Scientific literature; Critical evaluation of the article; Analysis of the research quality, validity, reliability, relevance and effect size; Medical journals; Critical evaluation of the article; Evidence based medicine, meta-analysis, systematic reviews; Peer review procedure; Response to reviewer's comments.  **Fundraising and writing the Research Grant:** Successful project applications in biomedicine; From the idea to the title and summary; Discussion of individual ideas and suggestions how to improve them; Creation of hypotheses based on the literature (critical appraisal of the literature and creation of 2-3 working hypotheses); Procedures, protocols and plans (critical reflection to and writing of detailed research plan related to precise time boundaries); Aims, applications and expected results (discussion of expected results and potentials of their practical application and commercialization)  Associated administration (expense sheets, plan for presentation and dissemination of results)  **General Biostatistics:** Statistics overview; Descriptive statistical methods; Analytic statistical methods; Critical appraisal – case study; Discussion on student's research topics; Computer practical – descriptive analysis, categorical dana, numeric dana; regression and advanced analytic methods; Quantitative meta-analysis; Bayesian statistics; Statistical advices; Principles of Qualitative research and qualitative metasynthesis; Statistical vs. clinical importance, Patient Cantered outcomes  **Lab Management and Laboratory Animal Science:** GLP - Good Laboratory Practice, Safety in Lab; Introduction to laboratory animal science, Responsible use of laboratory animals, 3R principle and experimental animals alternatives; Experimental animals legislation and regulations, Professional societies and organizations for animal protection; Small mammals as experimental animals, Nomenclature of the mouse and rat strains; Animal models and their translational value; Pain and stress in experimental animals; Behavioral testing  **Writing the Research Plan:** Individual work with students | | | | | | | | | | | | |
| Format of instruction | Lectures, seminars and practical work | | | | | ☐       (other) | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | | 19 | Research | | |  | Practical training | | |  | | |
| Experimental work | |  | Report | | |  | (Other) | | |  | | |
| Essay | |  | Seminar essay | | |  | (Other) | | |  | | |
| Tests | | 1 | Oral exam | | |  | (Other) | | |  | | |
| Written exam | | 2 | Project | | |  | (Other) | | |  | | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | | **Availability via other media** | |
| * Marušić M, ur. Uvod u znanstveni rad u medicini. Zagreb: Medicinska naklada; 2019. * Wager E. Getting Research Published: An A-Z of Publication Strategy. CRC Press, 2015. * Ferenczi E, Muirhead N. Statistika i epidemiologija u jednom potezu. Zagreb: Medicinska naklada; 2011. * Day RA, Gastel N. How to write and publish a scientific paper, 6th edition. Westport (CT): Greenwood Press; 2006. * Lefebvre C, Manheimer E, Glanville J.  Chapter 6: Searching for studies. In: Higgins JPT, Green S (editors). Cochrane handbook for systematic reviews of interventions Version 5.1.0 (updated March 2011). The Cochrane Collaboration; 2011. * McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS Peer Review of Electronic Search Strategies: 2015 guideline statement. J Clin Epidemiol. 2016;75:40-6. * Lang T, Secic M. How To report statistics in medicine: annotated guidelines for authors, editors, and reviewers, 2nd edition. Philadelphia (PA): American College of Physicians; 2006. * Centre for health evidence. Users' guides to evidence-based practice. * Ball C. The evidence based clinician: part 1, asking answerable questions. Student BMJ 2002;10:313-4. * The First-Time Grantwriter's Guide to Success, by Cynthia R. Knowles, Corwin Press, 2002, ISBN 0761945369. * Grant Application Writers Handbook by Liane Reif-Lehrer, Jones and Bartlett Publishers, 2004, ISBN 0763716421. * Petrie A, Sabin C. Medical Statistics at a Glance. Blackwell Publishing, treće izdanje, 2009. * Kirkwood BR: Essentials of medical statistics. Blackwell Scientific Publications, Oxford, 1992. * National Research Council. Guide for the Care and Use of Laboratory Animals. National Academy Press; 1996; Washington. Institute for Laboratory Animal Research (ILAR) web resources * Barker K. At the Bench: A Laboratory NavigatorAt the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2005. * Making the Right Moves: A Practical Guide to Scientifıc Management for Postdocs and New Faculty. Burroughs Wellcome Fund and Howard Hughes Medical Institute, 2006. ([*http://www.hhmi.org/labmanagement*](http://www.hhmi.org/labmanagement)*)* * Barker K. At the Bench: A Laboratory Navigator At the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2005. | | | | | | | |  | | | Internet and in PDF format | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | |

## 2. Transferable skills in biomedicine (Prenosive vještine)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Naziv predmeta** | | **Prenosive vještine** | | | | | | | | | | | |
| **Kod** | PT-OP12 | | Godina studija | | | | | | TRIBE, 1. godina | | | | |
| **Nositelj/i predmeta** | Prof.dr.sc. D. Sapunar | | Bodovna vrijednost (ECTS) | | | | | | 10 | | | | |
| Suradnici | Prof.dr.sc. A. Marušić  Prof.dr.sc. L. Puljak  Prof.dr.sc. L. Vranješ Markić  Prof.dr.sc. M. Đelalija  Doc.dr.sc. I. Bilić  Dr.sc. D. Juras  Dr.sc. L. Barać | | Način izvođenja nastave (broj sati u semestru) | | | | | | P | S | V | | T |
| 40 | 24 | 16 | | 80 |
| Status predmeta | Obavezni | | Postotak primjene e-učenja | | | | | | 20% | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | |
| Ciljevi predmeta | **Vještine potrebne istraživaču:** Cilj nastave je osposobiti studente u prenosivim vještinama.  **Komunikacijske i prezentacijske vještine:** Cilj nastave je osposobiti studente za komunikaciju s medijima i profesionalnom zajednicom.  **Etika u istraživanju:** Cilj nastave je osposobiti studente za kritičku analizu etičkih principa povezanih s biomedicinom i srodnim disciplinama.  **Poduzetništvo i prijenos tehnologije:** Cilj nastave je upoznati studente vještinama u poduzetništvu i prijenosu tehnologije. | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | / | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | **Vještine potrebne istraživaču**  Ishodi učenja: Nakon završetka predmeta student će moći: objasniti principe kritičkog mišljenja; definirati načela osiguranja kvalitete; opisati i primijeniti metode pohrane podataka; opisati principe timskog rada i rada s mentorom, opisati osnovne principe upravljanja istraživačkom skupinom; opisati principe međunarodnih kolaboracija; opisati i analizirati probleme međuljudskih odnosa u radnom okruženju.  **Komunikacijske i prezentacijske vještine**  Ishodi učenja: Nakon završetka tečaja student će moći: napraviti dobru prezentaciju; prezentirati informacije na vrlo učinkovit način; kontrolirati tjeskobu u govorništvu; komunicirati s medijima; pripremiti priopćenje za javnost; opisati zakone koji se odnose na odnose s medijima; opisati načela poslovne korespondencije; pripremiti poster za istraživačku konferenciju; organizirati istraživačku konferenciju.  **Etika u istraživanju**  Ishodi učenja: Nakon završetka tečaja student će moći: razumjeti etičke principe i postupke tijekom istraživanja; objasniti etičke koncepte istraživanja na ljudima i pokusnim životinjama; primijeniti osnovno znanje iz etike na konkretnu istraživačku aktivnost; povezati znanje etičkih načela s metodologijom istraživanja; usporediti različita etička načela u različitim etičkim zahtjevima i pravilima u zemljama EU; tumačiti preporuke Etičkog povjerenstva o etičkom odobrenju za istraživanje; procijeniti etičke aspekte prijedloga za istraživanje i steći vještine za sudjelovanje u radu etičkih odbora; prihvatiti etičku i društvenu odgovornost za uspjeh istraživačkog procesa, društvenu korist rezultata istraživanja i moguće socijalne posljedice.  **Poduzetništvo i transfer tehnologije**  Ishodi učenja: Nakon završetka tečaja student će moći: razumjeti kako postati poduzetnik; razviti uspješnu poslovnu ideju, samostalno i / ili u suradnji s drugima; stvoriti poduzetničku tvrtku, samostalno i / ili u suradnji s drugima; prepoznati mogućnosti i generirati ideje; izvršiti analizu izvedivosti; napisati poslovni plan; izvršiti analizu konkurentnosti; razviti učinkovit poslovni model; pripremiti odgovarajuće etičke i pravne temelje; procijeniti financijsku snagu i održivost novih pothvata; izgraditi novi poslovni tim; razumjeti važnost intelektualnog vlasništva; pripremiti se za izazove rasta i njegovu evaluaciju; opisati strategiju za tvrtke u razvoju; opisati franšizu. | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | **Vještine istraživača:** Predavanje dobrodošlice, Što znači doktorirati?; Kritičko razmišljanje; Testiranje tretmana; Kontrola kvalitete; Upravljanje podatcima; Povlačenje ispravnih poteza - osobni plan razvoja karijere; Mobing; Upravna i disciplinska odgovornost medicinskih radnika; Seksualno uznemiravanje; Sukob interesa.  **Vještine komunikacije i prezentacije:** Javni govor, verbalna i neverbalna komunikacija; Komunikacija s medijima, Zakonodavstvo vezano uz medije; Što je dobra prezentacija? Planiranje i strukturiranje prezentacije; Priprema konferencijskog plakata; Organizirajuća konferencija; Poslovna korespondencija; Priopćenja za tisak; Priprema PowerPoint prezentacija; Komunikacija u timu ili na radnom mjestu; Kako komunicirati pozitivne, negativne, neutralne i uvjerljive poruke?; Međunarodna komunikacija; Pregovaranje.  **Etika u istraživanju:** odgovorno provođenje istraživanja; Etika publikacija; Etička samoprocjena; Odobrenje etike istraživanja.  **Poduzetništvo i transfer tehnologije:** Uvod u poduzetništvo i transfer tehnologije; Identificiranje prilika i generiranje ideja; Analiza izvedivosti; Testiranje ideja; Platno strategije; Analiza konkurencije; Poslovni modeli; Marketing; Platno poslovnog modela; Uvod u intelektualno vlasništvo; Tehničko pokretanje; "Nagib"; Pretraživanje baza podataka o patentima; Prezentacija poslovnih pothvata. | | | | | | | | | | | | |
| Vrste izvođenja nastave: | Predavanja, seminari i vježbe | | | | | ☐ ☐       (ostalo upisati) | | | | | | | |
|
| Obveze studenata | Nazočnost na nastavi 80% predavanja, 90% seminari i 100% vježbe | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave | | 19 |  |  | | |  | | | |  | |
| Seminarski rad | |  |  |  | | | (Ostalo upisati) | | | |  | |
| Pismeni ispit | | 1 |  |  | | | (Ostalo upisati) | | | |  | |
|  | |  |  |  | | | (Ostalo upisati) | | | |  | |
|  | |  |  |  | | | (Ostalo upisati) | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Pisani ispit | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | | | |
| 1. EC. Syllabus on ethics in research: <http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=KIN124551> 2. EC. European textbook on ethics in research: <http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=KINA24452> 3. Helsinška deklaracija: <http://www.wma.net/en/30publications/10policies/b3/> EU legislacija  pokusima na životinjama: <http://ec.europa.eu/environment/chemicals/lab_animals/home_en.htm> 4. ARRIVE guideline for reporting animal research: <http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.1000412> 5. Etički kodeks MF Split: <http://neuron.mefst.hr/docs/dokumenti/pravilnici/Eticki%20kodeks.doc> i <http://neuron.mefst.hr/docs/dokumenti/pravilnici/Pravilnik%20o%20radu%20Etikog%20povjerenstva.doc> 6. Bruce R. Barringer and R. Duane Ireland, Entrepreneurship: Successfully Launching New Ventures, 2nd ed., Upper Saddle River, New Jersey, 2008 7. Barker K. At the Bench: A Laboratory NavigatorAt the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2005. | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | | | |
| Dopunska literatura | Dodatni nastavni materijali koje je pripremio nastavnik. | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAME OF THE COURSE** | | **Transferable skills** | | | | | | | | | | | | |
| **Code** | PT-OP12 | | | | Year of study | | | | TRIBE, 1st year | | | | | |
| Course teacher | Prof. D. Sapunar | | | | Credits (ECTS) | | | | 10 | | | | | |
| Associate teachers | Prof.dr.sc. A. Marušić  Prof.dr.sc. L. Puljak  Prof.dr.sc. L. Vranješ Markić  Prof.dr.sc. M. Đelalija  Doc.dr.sc. I. Bilić  Dr.sc. D. Juras  Dr.sc. L. Barac | | | | Type of instruction (number of hours) | | | | L | S | E | | | T |
| 40 | 24 | 16 | | | 80 |
| Status of the course | Mandatory | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aims of the course | **Researchers' skills :** The objective of the subcourse is to train students in transferable skills.  **Communication and presentation skills:** The objective of the subcourse is to train students to communicate with the media and professional communities.  **Ethics in research:** The objective of the subcourse is to train students in critical analysis of ethical principles related to biomedicine and related disciplines.  **Entrepreneurship and transfer of technology:** The objective of the subcourse is to teach students skills in entrepreneurship and transfer of technology. | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | **Researchers' skills**  Learning outcomes: After completing the course, a student will be able to: explain principles of critical thinking; define quality assurance principles; describe and apply data storage methods; describe principles of team work and work with mentor, describe basic principles of management of the research group; describe principles of international collaborative work; describe and analyze interpersonal relationships problems in work environment.  **Communication and presentation skills**  Learning outcomes: After completing the course, a student will be able to: make a good presentation; present information in highly efficient way; control public speaking anxiety; communicate with the media; prepare press release; describe legislation related to media relations; describe principles of business correspondence; prepare poster for a research conference; organize a research conference.  **Ethics in research**  Learning outcomes: After completing the course, a student will be able to: understand ethical principles and procedures during research; explain ethical concepts of research on humans and experimental animals; apply basic knowledge in ethics to concrete research activity; relate the knowledge of ethical principles with the methodology of research; compare different ethical principles in different ethical requirements and rules in EU countries; interpret the recommendations of the Ethics Committee about ethical approval for research; assess ethical aspects of research proposals and acquire skills to participate in the work of ethics committees; accept ethical and social responsibility for the success of research process, social benefit of the research results and possible social consequences.  **Entrepreneurship and transfer of technology**  Learning outcomes: After completing the course, a student will be able to: understand how to become an entrepreneur; develop a successful business idea, independently and / or in cooperation with others; create an entrepreneurial company, independently and / or in cooperation with others; identify opportunities and generate ideas; perform feasibility analysis; write a business plan; perform analysis of competitiveness; develop an effective business model; prepare appropriate ethical and legal foundations; assess the financial strength and viability of new ventures; construct a new business team; understand the importance of intellectual property; prepare for the challenges of growth and its evaluation; describe strategy for growth companies; describe franchise. | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | **Researchers' Skills:** Welcome lecture, What does it mean to get a PhD?; Critical thinking; Testing treatments; Quality control; Data management; Making the right moves - personal career development plan; Mobbing; Administrative and disciplinary responsibility of medical workers; Sexual harassment; Conflict of interest.  **Communication and Presentation Skills:** Public speaking, verbal and nonverbal communication; Communication with media, Legislation related to media; What is good presentation? Planning and structuring presentation; Preparing conference poster; Organizing conference; Business correspondence; Press releases; Preparation of the PowerPoint presentations; Communication in the team or in the workplace; How to communicate positive, negative, neutral and convincing messages?; International communication; Negotiating-  **Ethics in Research:** Responsible conduct of research; Publication ethics; Ethics self-assessment; Research ethics approval.  **Entrepreneurship and Transfer of Technology:** Introduction in entrepreneurship and transfer of technology; Identifying opportunities and generating ideas; Feasibility analysis; Testing ideas; Strategy canvas; Competitor Analysis; Business models; Marketing; Business model canvas; Introduction to intellectual property; Tech Startup; "Pitch"; Searching patent databases; Presentation of business ventures. | | | | | | | | | | | | | |
| Format of instruction | Lectures, seminars and practical work | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 2 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | | **Availability via other media** | | |
| * . EC. Syllabus on ethics in research: <http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=KIN124551> * EC. European textbook on ethics in research: <http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=KINA24452> * Helsinška deklaracija: <http://www.wma.net/en/30publications/10policies/b3/> EU legislacija  pokusima na životinjama: <http://ec.europa.eu/environment/chemicals/lab_animals/home_en.htm> * ARRIVE guideline for reporting animal research: <http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.1000412> * Etički kodeks MF Split: <http://neuron.mefst.hr/docs/dokumenti/pravilnici/Eticki%20kodeks.doc> i <http://neuron.mefst.hr/docs/dokumenti/pravilnici/Pravilnik%20o%20radu%20Etikog%20povjerenstva.doc> * Bruce R. Barringer and R. Duane Ireland, Entrepreneurship: Successfully Launching New Ventures, 2nd ed., Upper Saddle River, New Jersey, 2008 * Barker K. At the Bench: A Laboratory NavigatorAt the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2005. | | | | | | | |  | | | Internet and in PDF format | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

# Novi izborni predmeti

## 1. Communication standards for manuscript submission to a scientific journal (Standardi komunikacije tijekom slanja rukopisa u znanstveni časopis)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Naziv predmeta** | | **Standardi komunikacije tijekom slanja rukopisa u znanstveni časopis** | | | | | | | | | | | | |
| **Kod** |  | | Godina studija | | | | | TRIBE, 2. godina | | | | | | |
| **Nositelj/i predmeta** | izv. prof. dr. sc. Viktor Čulić | | Bodovna vrijednost (ECTS) | | | | | 2 | | | | | | |
| Suradnici |  | | Način izvođenja nastave (broj sati u semestru) | | | | | P | S | | V | | T |  |
| 4 | 2 | | 4 | | 10 |
| Status predmeta | Izborni | | Postotak primjene e-učenja | | | | | 20% | | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | |
| Ciljevi predmeta | Usvajanje standarda komunikacije tijekom različitih faza slanja rukopisa u medicinski časopis. | | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema preduvjeta | | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | Nakon položenog predmeta student će moći:  - odlučiti u kojim slučajevima i kako pisati upit prije slanja rukopisa u časopis  - napisati primjereno popratno pismo glavnom uredniku  - što napraviti kad izostane bilo kakav odgovor na slanje rukopisa  - analizirati komentare recenzenata i shvatiti njihova traženja  - učiniti odgovarajuće promjene u rukopisu i to detaljno pojasniti  - primjereno odgovoriti na neslaganje s primjedbama recenzenata ili urednika  - kada i kako izraziti neslaganje s odbijanjem rukopisa  - kada prihvatiti ponuđenu uslugu transfera u drugi časopis | | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | Prethodni upit glavnom uredniku o slanju rukopisa u znanstveni časopis; Bitne sastavnice primjerenog popratnog pisma rukopisa glavnom uredniku; Mogući ishodi prvog kruga recenzije rukopisa; Odgovaranje na primjedbe recenzenata i urednika; Neslaganje s mišljenjima recenzenata i urednika; Što recenzenti vole, a što ne; Pokusni otisak: mogućnost manjih popravaka; Razlozi odbijanja rukopisa; Neslaganje s odlukom o odbijanju rukopisa; Transfer rukopisa u drugi znanstveni časopis. | | | | | | | | | | | | | |
| Vrste izvođenja nastave: | predavanja, seminari i vježbe | | | | | | | ☐ ☐       (ostalo upisati) | | | | | | |
|
| Obveze studenata | Nazočnost na nastavi 80% predavanja, 90% seminari i 100% vježbe | | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave | | 1 |  |  |  | | | | | |  | | |
| Seminarski rad | |  |  |  | (Ostalo upisati) | | | | | |  | | |
| Pismeni ispit | | 1 |  |  | (Ostalo upisati) | | | | | |  | | |
|  | |  |  |  | (Ostalo upisati) | | | | | |  | | |
|  | |  |  |  | (Ostalo upisati) | | | | | |  | | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Pisani ispit | | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | | | | |
| Znanstveni članci:   1. Lengauer T, Nussinov R. How to write a presubmission inquiry. PLoS Comput Biol 2015;11(2):e1004098. 2. Moustafa K. Does the cover letter really matter? Sci Eng Ethics 2015;21(4):839-41. 3. Annesley TM. Top 10 tips for responding to reviewer and editor comments. Clin Chem 2011;57(4):551-4. 4. Provenzale JM. Revising a manuscript: ten principles to guide success for publication. AJR Am J Roentgenol 2010;195(6):W382-7. 5. Glover NM, Antoniadi I, George GM, i sur. A pragmatic approach to getting published: 35 tips for early career researchers. Front Plant Sci 2016;7:610. | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | | | | |
| Dopunska literatura | Dodatni nastavni materijali koje je pripremio nastavnik. | | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAME OF THE COURSE** | | **Communication standards for manuscript submission to a scientific journal** | | | | | | | | | | | | |
| **Code** | MFMI… | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Assoc. prof. Viktor Čulić, MD, PhD | | | | Credits (ECTS) | | | | 2 | | | | | |
| Associate teachers |  | | | | Type of instruction (number of hours) | | | | L | S | | | E | T |
| 4 | 2 | | | 4 | 10 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | |  | | --- | | Understanding and adoption of communication standards for all phases of submission of manuscript to a scientific journal including: |   - decision when and how to send a pre-submission inquiry  - writing an appropriate cover letter  - analyze reviewers' comments and understand their requests  - make necessary changes in the manuscript and explain them  - disagreement with and response to editor's and reviewers' comments  - when and how to write an appeal to manuscript rejection  - when to use the service of manuscript transfer in another journal | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | |  | | --- | | Pre-submission inquiry to editor-in-chief of a scientific journals; Essentials of appropriate cover letter to editor-in-chief; Possible outcomes of the first round of manuscript review; Response to editor's and reviewers' comments; Disagreement with editor's and reviewers' comments; What reviewers do and do not like; Checking the accepted article: proofing procedure; Reasons for manuscript rejection; Disagreement with manuscript rejection: writing an appeal; Manuscript transfer in another journal. | | | | | | | | | | | | | | |
| Format of instruction | lectures, seminars and practical work | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | |  | | |
| Experimental work | |  | Report | | |  | (Other) | | | |  | | |
| Essay | |  | Seminar essay | | |  | (Other) | | | |  | | |
| Tests | |  | Oral exam | | |  | (Other) | | | |  | | |
| Written exam | | 2 | Project | | |  | (Other) | | | |  | | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Scientific papers:   1. Lengauer T, Nussinov R. How to write a presubmission inquiry. PLoS Comput Biol 2015;11(2):e1004098. 2. Moustafa K. Does the cover letter really matter? Sci Eng Ethics 2015;21(4):839-41. 3. Annesley TM. Top 10 tips for responding to reviewer and editor comments. Clin Chem 2011;57(4):551-4. 4. Provenzale JM. Revising a manuscript: ten principles to guide success for publication. AJR Am J Roentgenol 2010;195(6):W382-7. 5. Glover NM, Antoniadi I, George GM, et al. A pragmatic approach to getting published: 35 tips for early career researchers. Front Plant Sci 2016;7:610. | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

## 2. Writing a doctoral thesis (Pisanje doktorske disertacije)

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| **Naziv predmeta** | | | **Pisanje doktorske disertacije** | | | | | | | | | | | | |
| **Kod** |  | Godina studija | | | | | | | TRIBE, 2. godina | | | | | | |
| **Nositelj/i predmeta** | Prof. dr. sc. Livia Puljak | Bodovna vrijednost (ECTS) | | | | | | | 3 | | | | | | |
| Suradnici |  | Način izvođenja nastave (broj sati u semestru) | | | | | | | P | S | | V | | T |  |
| 18 | 0 | | 2 | | 0 |
| Status predmeta | Izborni | Postotak primjene e-učenja | | | | | | | 20% | | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | | |
| Ciljevi predmeta | Učenje principa pisanja doktorske disertacije | | | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema preduvjeta | | | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | Nakon položenog predmeta student će moći:  - objasniti razliku između doktorske disertacije koja se temelji na monografskom i skandinavskom modelu  - pronaći upute za pisanje doktorske disertacije koje propisuje Fakultet  - samostalno napisati skicu doktorske disertacije prema poglavljima koje propisuje Fakultet  - samostalno napraviti plan pisanja doktorske disertacije | | | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | Predmet uključuje podučavanje o različitim modelima doktorske disertacije (monografski i skandinavski model), analizu uputa za pisanje različitih modela doktorskih disertacija, planiranje skice doktorske disertacije prema propisanim poglavljima, izradu plana pisanja doktorske disertacije, savjete za pisanje disertacije i praktični dio u kojem će studenti napisati skicu doktorske disertacije kao zadatak za ocjenu. | | | | | | | | | | | | | | |
| Vrste izvođenja nastave: | predavanja, seminari i vježbe | | | | | ☐ ☐       (ostalo upisati) | | | | | | | | | |
| Obveze studenata | Nazočnost na nastavi 80% predavanja, 90% seminari i 100% vježbe | | | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave | 2 | |  |  | |  | | | | | |  | | |
| Seminarski rad |  | |  |  | | (Ostalo upisati) | | | | | |  | | |
| Pismeni ispit | 1 | |  |  | | (Ostalo upisati) | | | | | |  | | |
|  |  | |  |  | | (Ostalo upisati) | | | | | |  | | |
|  |  | |  |  | | (Ostalo upisati) | | | | | |  | | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Pisani ispit | | | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | | | | |
| Znanstveni članci:   1. How to write a doctoral thesis. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4859004/> 2. Writing the doctoral thesis differently. <https://journals.sagepub.com/doi/10.1177/1350507618799867> 3. How to write a PhD thesis. <http://newt.phys.unsw.edu.au/~jw/thesis.html> | | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | | | | |
| Dopunska literatura | Dodatni nastavni materijali koje je pripremio nastavnik. | | | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAME OF THE COURSE** | | | **Writing a doctoral thesis** | | | | | | | | | | | |
| **Code** |  | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Prof. Livia Puljak, MD, PhD | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers |  | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 18 | 0 | | 2 | | 0 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | After passing the course, a student will be able to:  - explain the difference between different PhD thesis models, based on a monograph or a „Scandinavian“ model  - find instructions for writing a PhD thesis prescribed by the School  - independently write outline of a PhD thesis based on chapters prescribed by the School  - independently create thesis writing plan | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | The course includes teaching about different models of a PhD thesis (monograph vs “Scandinavian” model), analysis of instructions for writing different thesis models, planning an outline of a PhD thesis based on instructions, creating a thesis writing plan, provision of advices for writing a thesis, and a practical part in which students will write an outline of their PhD thesis as a grading assignment. | | | | | | | | | | | | | |
| Format of instruction | lectures, seminars and practical work | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance |  | | Research | | |  | Practical training | | | | |  | |
| Experimental work |  | | Report | | |  | (Other) | | | | |  | |
| Essay |  | | Seminar essay | | |  | (Other) | | | | |  | |
| Tests |  | | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | 2 | | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Znanstveni članci:  How to write a doctoral thesis. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4859004/>  Writing the doctoral thesis differently. <https://journals.sagepub.com/doi/10.1177/1350507618799867>  How to write a PhD thesis. <http://newt.phys.unsw.edu.au/~jw/thesis.html> | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

## 3. The science of breastfeeding and lactation (Nove znanstvene spoznaje o laktaciji i dojenju)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAZIV PREDMETA** | **Nove znanstvene spoznaje o laktaciji i dojenju** | | | | | | | | | | | | | |
| **Kod** | |  | | | Godina studija | | | | 2 | | | | | |
| **Nositelj/i predmeta** | | doc.dr.sc. Irena Zakarija-Grković | | | Bodovna vrijednost (ECTS) | | | | 3 | | | | | |
| Suradnici | | Prof. dr. sc. Ivica Grković | | | Način izvođenja nastave (broj sati u semestru) | | | | P | S | | V | | T |
| 10 | 4 | |  | |  |
| Status predmeta | | Izborni | | | Postotak primjene e-učenja | | | | 20% | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | |
| Ciljevi predmeta | | Cilj nastave predmeta „Nove znanstvene spoznaje o laktaciji i dojenju“ je upoznati polaznike s suvremenim spoznajama vezanim za procesa laktacije, podići svijest o važnosti dojenja i informirati sudionike o raspoloživim resursima za zaštitu, promicanje i potporu dojenju. | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | | Nema preduvjeta | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | | - Naučiti nove spoznaje o anatomiji dojke i kako to utječe na laktaciju  - Razumjeti fiziologiju laktacije i objasniti kako se prilagođava potrebama djeteta  - Navesti rizike umjetne prehrane (ne-dojenja) za zdravlje majke i djeteta te znati potkrijepiti pouzdanim znanstvenim dokazima  - Navesti posljedice umjetne prehrane za okoliš i opisati načine kako ih svesti na minimum  - Opisati svjetske inicijative za zaštitu, podršku i promidžbu dojenja  - Opisati hrvatske inicijative za zaštitu, podršku i promidžbu dojenja te nabrojati dostupne resurse | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | | **PREDAVANJA:**  **Nova anatomija dojke…………… 1h P**  **Fiziologija laktacije; zablude i istine; normalno ponašanje dojenčadi…….2h P**  **Mikrobiota humanog mlijeka, dojenje i COVID-19….. 1h P**  **Rizici umjetne prehrane za majku, dijete i okoliš……2h P**  **Svjetske inicijative za zaštitu, promidžbu i podršku dojenju; definicije i indikatori prehrane dojenčadi i male djece……2h P**  **Hrvatske inicijative za zaštitu, promidžbu i podršku dojenju……2h P**  **SEMINARI**  **Korisni resursi za zdravstvene djelatnike…..2h S**  **Korisni resursi za dojilje……..2h S** | | | | | | | | | | | | |
| Vrste izvođenja nastave: | | * ☒ predavanja * ☒ seminari i radionice   ☐ vježbe  ☐*on line* u cijelosti  ☐ mješovito e-učenje  ☐ terenska nastava | | | | ☐ samostalni zadaci  ☐ multimedija  ☐ laboratorij  ☐ mentorski rad  ☐      (ostalo upisati) | | | | | | | | |
|
| Obveze studenata | |  | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | | Pohađanje nastave |  | Istraživanje | | |  | Praktični rad | | | | |  | |
| Eksperimentalni rad |  | Referat | | |  | (Ostalo upisati) | | | | |  | |
| Esej |  | Seminarski rad | | |  | (Ostalo upisati) | | | | |  | |
| Kolokviji |  | Usmeni ispit | | |  | (Ostalo upisati) | | | | |  | |
| Pismeni ispit |  | Projekt | | |  | (Ostalo upisati) | | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | | Seminarski rad (priprema i održavanje MS PPT prezentacije, na osnovu analize znanstvenih članaka o određenom području dojenja). | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | | **Naslov** | | | | | | | **Broj primjeraka u knjižnici** | | **Dostupnost putem ostalih medija** | | | |
| Puharić D, Malički M, Borovac JA, Šparac V, Poljak B, Aračić N, Marinović N, Luetić N, Zakarija-Grković I. The effect of a combined intervention on exclusive breastfeeding in primiparas: A randomised controlled trial. Matern Child Nutr. 2020 Jan 13:e12948. doi: 10.1111/mcn.12948. | | | | | | |  | | Da | | | |
| Joffe N, Webster F, Shenker N. Support for breastfeeding is an environmental imperative. BMJ. 2019 Oct 2;367:l5646. doi: 10.1136/bmj.l5646. PMID: 31578194. | | | | | | |  | | Da | | | |
| Grgurić J, Zakarija-Grković I, Pavičić Bošnjak A, Stanojević M. A Multifaceted Approach to Revitalising the Baby-Friendly Hospital Initiative in Croatia. J Hum Lact. 2016;32(3):568-73. | | | | | | |  | | Da | | | |
| Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC; Lancet Breastfeeding Series Group. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet. 2016 Jan 30;387(10017):475-90. doi: 10.1016/S0140-6736(15)01024-7. PMID: 26869575. | | | | | | |  | | Da | | | |
| Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, Piwoz EG, Richter LM, Victora CG; Lancet Breastfeeding Series Group. Why invest, and what it will take to improve breastfeeding practices? Lancet. 2016 Jan 30;387(10017):491-504. doi: 10.1016/S0140-6736(15)01044-2. PMID: 26869576. | | | | | | |  | | Da | | | |
| Dopunska literatura | | Zakarija-Grković I et al. Are our babies off to a healthy start? The state of implementation of the Global Strategy for Infant and Young Child Feeding in 18 European countries. Split: Medicinski fakultet, 2020. | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | | * Analiza kvalitete nastave od strane studenata i nastavnika * Analiza prolaznosti na ispitima * Izvješća Povjerenstva za kontrolu provedbe nastave * Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP) | | | | | | | | | | | | |
| Ostalo (prema mišljenju predlagatelja) | |  | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAME OF THE COURSE** | | **The science of breastfeeding and lactation** | | | | | | | | | | | | |
| **Code** |  | | | | Year of study | | | | 2 | | | | | |
| Course teacher | Assistant prof. Irena Zakarija-Grković, MD, FRACGP, IBCLC, PhD | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers | **Prof. Ivica Grković, MD, PhD** | | | | Type of instruction (number of hours) | | | | L | S | E | | | F |
| 10 | 4 |  | | |  |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Course objectives | The course objective is to create a modern understanding of the process of lactation, raise awareness of the importance of breastfeeding, and inform participants of the available resources for the protection, promotion and support of breastfeeding. | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | No prerequisites | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | - Know new anatomical findings of the breast and understand how they may impact breastfeeding  - Describe the physiology of lactation and how this determines infant behaviour  - Explain the risks of artificial feeding for the infant, mother and environment and know where to find reliable scientific evidence  - Describe international initiatives for the protection, promotion and support of breastfeeding  - Describe Croatian initiatives for the protection, promotion and support of breastfeeding  - Know where to find resources on breastfeeding for health professionals and mothers | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Lectures (10 hours):  The new anatomy of the breast…. 1h  The physiology of lactation and normal infant behavior…. 2h  The human milk microbiome, breastfeeding and COVID-19.... 1h  The risks of artificial feeding for maternal/infant health and the environment…2h  International initiatives for the protection, promotion and support of breastfeeding; definitions and indicators of infant feeding….2h  Croatian initiatives for the protection, promotion and support of breastfeeding….2h  Seminars (4 hours):  Breastfeeding resources for health professionals…. 2h  Breastfeeding resources for parents….2h | | | | | | | | | | | | | |
| Format of instruction | * ☒ lectures * ☒ seminars and workshops   ☐ exercises  ☐ *on line* in entirety  ☐ partial e-learning  ☐ field work | | | | | ☐ independent assignments  ☐ multimedia  ☐ laboratory  ☐ work with mentor  ☐       (other) | | | | | | | | |
|
| Student responsibilities |  | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | |  | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Seminar presentation – students will be asked to orally present a summary of a clinical protocol on a breastfeeding topic | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | | **Availability via other media** | | |
| Puharić D, Malički M, Borovac JA, Šparac V, Poljak B, Aračić N, Marinović N, Luetić N, Zakarija-Grković I. The effect of a combined intervention on exclusive breastfeeding in primiparas: A randomised controlled trial. Matern Child Nutr. 2020 Jan 13:e12948. doi: 10.1111/mcn.12948. | | | | | | | |  | | | Yes | | |
| Joffe N, Webster F, Shenker N. Support for breastfeeding is an environmental imperative. BMJ. 2019 Oct 2;367:l5646. doi: 10.1136/bmj.l5646. PMID: 31578194. | | | | | | | |  | | | Yes | | |
| Grgurić J, Zakarija-Grković I, Pavičić Bošnjak A, Stanojević M. A Multifaceted Approach to Revitalising the Baby-Friendly Hospital Initiative in Croatia. J Hum Lact. 2016;32(3):568-73. | | | | | | | |  | | | Yes | | |
| Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC; Lancet Breastfeeding Series Group. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet. 2016 Jan 30;387(10017):475-90. doi: 10.1016/S0140-6736(15)01024-7. PMID: 26869575. | | | | | | | |  | | | Yes | | |
| Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, Piwoz EG, Richter LM, Victora CG; Lancet Breastfeeding Series Group. Why invest, and what it will take to improve breastfeeding practices? Lancet. 2016 Jan 30;387(10017):491-504. doi: 10.1016/S0140-6736(15)01044-2. PMID: 26869576. | | | | | | | |  | | | Yes | | |
| Optional literature (at the time of submission of study programme proposal) | Zakarija-Grković I et al. Are our babies off to a healthy start? The state of implementation of the Global Strategy for Infant and Young Child Feeding in 18 European countries. Split: Medicinski fakultet, 2020. | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |
| Other (as the proposer wishes to add) |  | | | | | | | | | | | | | |

## 4. A step-by-step guide to conducting a systematic review (Praktični koraci u izradi sustavnog pregleda)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Naziv predmeta** | | **Praktični koraci u izradi sustavnog pregleda** | | | | | | | | | | | | | |
| **Kod** |  | | | Godina studija | | TRIBE, 2. godina | | | | | | | | | |
| **Nositelj/i predmeta** | Prof. dr. sc. Livia Puljak | | | Bodovna vrijednost (ECTS) | | 3 | | | | | | | | | |
| Suradnici | doc. dr. sc. Tina Poklepović Peričić | | | Način izvođenja nastave (broj sati u semestru) | | P | | S | V | | | T |  | | |
| 18 | | 0 | 2 | | | 0 |
| Status predmeta | Izborni | | | Postotak primjene e-učenja | | 20% | | | | | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | | |
| Ciljevi predmeta | Učenje osnova metodologije izrade sustavnih pregleda | | | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema preduvjeta | | | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | Nakon položenog predmeta student će moći:  - opisati glavne dijelove Cochraneovog priručnika za izradu sustavnog pregleda o intervencijama (engl. Cochrane Handbook for Systematic Reviews of Interventions)  - opisati glavne dijelove sustavnog preglednog rada  - opisat razliku između sustavnog pregleda i meta-analize  - samostalno napraviti okvir izrade sustavnog pregleda  - samostalno napraviti probir (engl. screening) zapisa pretraživanja  - samostalno pretraživati PROSPERO registar i časopise u kojima se objavljuju protokoli sustavnih pregleda  - opisati osnovne metodološke korake izrade sustavnog pregleda | | | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | U okviru predmeta obradit će se sljedeće cjeline:  Hijerarhija dokaza u medicini, sustavni pregled, Cochrane, predavanje  Metodološki koraci u izradi sustavnih pregleda, predavanje  Postavljanje kliničkog pitanja, PICO format, predavanje  Izrada i registracija protokola sustavnog pregleda, PROSPERO, predavanje  Pretraživanje literature, predavanje  Probir naslova i sažetaka, probir cjelovitih tekstova, vježba  Ekstrakcija podataka, predavanje  Procjena rizika od pristranosti, predavanje  Analiza podataka; RevMan, predavanje  Procjena kvalitete sustavnih pregleda, predavanje | | | | | | | | | | | | | | |
| Vrste izvođenja nastave: | Predavanja i vježbe | | | | | ☐ ☐       (ostalo upisati) | | | | | | | | | |
|
| Obveze studenata | Nazočnost na nastavi 80% predavanja, 100% vježbe | | | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave | |  | |  | |  | | |  | | | | |  |
| Seminarski rad | |  | |  | |  | | | (Ostalo upisati) | | | | |  |
| Pismeni ispit | | 2 | |  | |  | | | (Ostalo upisati) | | | | |  |
|  | |  | |  | |  | | | (Ostalo upisati) | | | | |  |
|  | |  | |  | |  | | | (Ostalo upisati) | | | | |  |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Pisani ispit | | | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | |
| Priručnik:  Cochrane Handbook for Systematic Reviews of Interventions. Version 6.1, 2020. Dostupno na: <https://training.cochrane.org/handbook/current> | | | | | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | |
| Dopunska literatura | Dodatni nastavni materijali koje je pripremio nastavnik. | | | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAME OF THE COURSE** | | **A step-by-step guide to conducting a systematic review** | | | | | | | | | | | | |
| **Code** |  | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Prof. Livia Puljak, MD, PhD | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers | Prof. Tina Poklepović Peričić, DDM, PhD | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 18 | 0 | | 2 | | 0 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aims of the course | Learning basic methodological steps for conducting a systematic review of literature | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | After passing the course, a student will be able to:  - describe the main parts of the Cochrane Handbook for Systematic Reviews of Interventions  - to describe main parts of a systematic review  - to describe a difference between a systematic review and meta-analysis  - to independently conduct screening of search records  - to independently search PROSPERO registry and journals that publish systematic review protocols  - to describe basic methodological steps involved in a systematic review | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Within the course, the students will be taught the following:  Hierarchy of evidence in medicine, systematic review, Cochrane (lecture)  Methodological steps of a systematic review (lecture)  Asking a clinical question, PICO format (lecture)  Creating and registering a systematic review protocol; PROSPERO (lecture)  Searching the literature (lecture)  Screening titles and abstracts; screening of full texts (practical)  Data extraction (lecture)  Risk of bias assessment (lecture)  Data analysis; RevMan (lecture)  Assessing quality of systematic reviews (lecture) | | | | | | | | | | | | | |
| Format of instruction | lectures, and practical work | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 2 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Online handbook:  Cochrane Handbook for Systematic Reviews of Interventions. Version 6.1, 2020. Dostupno na: <https://training.cochrane.org/handbook/current> | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

## 5. The plasticity of the neurochemical phenotype (Plasticitet neurokemijskog fenotipa)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NAZIV PREDMETA | Plasticitet neurokemijskog fenotipa | | | | | | | | | | | | |
| **Kod** | | PT-IP07 | | | Godina studija | | | | 2 | | | | |
| **Nositelj/i predmeta** | | Prof.dr.sc. Grković Ivica | | | Bodovna vrijednost (ECTS) | | | | 2 | | | | |
| Suradnici | |  | | | Način izvođenja nastave (broj sati u semestru) | | | | P | S | | V | T |
| 6 | 6 | | 0 |  |
| Status predmeta | | Izborni | | | Postotak primjene e-učenja | | | | 20% | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | |
| Ciljevi predmeta | | Upoznati studente s istraživanjima kemijskog fenotipa povezanog s ciljnim organima. | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | | Položeni ispiti prve godine poslijediplomskog studija. | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | | Razumijevanje prirode definiranja kemijskog fenotipa vezanog uz ciljni organ u autonomnom živčanom sustavu. Razvoj mikrokirurškog modela promjene ciljnog tkiva/organa. | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | | Definicija i organizacija autonomnog živčanog sustava, uloga pre i postganglijskih neurona, faktori rasta, preživljavanje i diferencijacija neurona, kolonizacija neurona tijekom razvoja i ozljede, životinjski modeli promjene ciljnih organa, metode retrogradnog neuralnog bojanja i multiple imunohistokemije | | | | | | | | | | | |
| Vrste izvođenja nastave: | | ☒ predavanja  ☒ seminari i radionice  ☐ vježbe  ☐*on line* u cijelosti  ☐ mješovito e-učenje  ☐ terenska nastava | | | | ☐ samostalni zadaci  ☐ multimedija  ☐ laboratorij  ☐ mentorski rad  ☐      (ostalo upisati) | | | | | | | |
|
| Obveze studenata | | Pohađanje nastave i položeni ispit. Ispit se sastoji od pismenog rješavanja problema kojeg treba obraditi u obliku eseja. | | | | | | | | | | | |
| Praćenje rada studenata (upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta*):* | | Pohađanje nastave | 1 | Istraživanje | | |  | Praktični rad | | | |  | |
| Eksperimentalni rad |  | Referat | | |  | (Ostalo upisati) | | | |  | |
| Esej |  | Seminarski rad | | |  | (Ostalo upisati) | | | |  | |
| Kolokviji |  | Usmeni ispit | | |  | (Ostalo upisati) | | | |  | |
| Pismeni ispit | 1 | Projekt | | |  | (Ostalo upisati) | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | |  | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | | **Naslov** | | | | | | | **Broj primjeraka u knjižnici** | | **Dostupnost putem ostalih medija** | | |
| Central regulation of autonomic functions, Editor(s): Loewy AD, Spyer KM. 1990, Oxford University Press | | | | | | |  | |  | | |
| Dopunska literatura | |  | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | | * Analiza kvalitete nastave od strane studenata i nastavnika * Analiza prolaznosti na ispitima * Izvješća Povjerenstva za kontrolu provedbe nastave * Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP) | | | | | | | | | | | |
| Ostalo (prema mišljenju predlagatelja) | |  | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAME OF THE COURSE** | | **THE plasticity of neurochemical phenotype** | | | | | | | | | | | | |
| **Code** | PT-IP07 | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Prof.dr.sc. Grković Ivica | | | | Credits (ECTS) | | | | 2 | | | | | |
| Associate teachers |  | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 6 | 6 | |  | | 0 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aims of the course | The course objective is to inform student on recent investigations of target-dependent chemical phenotype in the autonomic nervous system. | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | Understand the nature of adoption of target-dependent chemical phenotype in the autonomic nervous system. Development of microsurgical model concerning tissue target shift. | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Definition and organization of the autonomic nervous system; role of pre- and post-ganglionic neurons; growth factors, survival and differentiation of neurons, Neuronal colonization during development and injury; Animals models of nerve shifting; Retrograde neuronal labeling; Multiple immunohistochemistry | | | | | | | | | | | | | |
| Format of instruction | lectures and seminars | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | | 1 | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 1 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Central regulation of autonomic functions, Editor(s): Loewy AD, Spyer KM. 1990, Oxford University Press | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

# Izborni predmeti s izmijenjenom satnicom i ECTS bodovima

## 1. How to choose a scientific journal? (Kako odabrati znanstveni časopis?)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NAZIV PREDMETA** | Kako odabrati znanstveni časopis? | | | | | | | | | | | | |
| **Kod** | | PT-IP29 | | | Godina studija | | | | 2 | | | | |
| **Nositelj/i predmeta** | | Prof. dr. sc. Ana Marušić, dr. med. | | | Bodovna vrijednost (ECTS) | | | | 3 | | | | |
| Suradnici | | Doc. dr.sc. Shelly Pranić | | | Način izvođenja nastave (broj sati u semestru) | | | | P | S | | V | T |
| 8 | 8 | |  |  |
| Status predmeta | | Izborni | | | Postotak primjene e-učenja | | | | 20% | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | |
| Ciljevi predmeta | | Cilj nastave predmeta „Kako odabrati časopis?“ jest razumijevanje i usvajanje znanja i vještina o publiciranju u znanstvenom časopisu. | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | | Položeni ispiti prve godine poslijediplomskog studija | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | | - **Opisati obilježja znanstvenih časopisa i načina mjerenja njihove kvalitete**  **- Objasniti, razlikovati i imenovati primjenu mjera indeksiranosti i citiranosti časopisa**  **- Navesti i objasniti načine publiciranja u znanosti – od copyrighta do licenci creative commons**  **- Objasniti i opisati razlike između legitimnih i predatorskih časopisa**  **- Navesti i objasniti etičke aspekte u publiciranju u znanstvenim časopisima, uključujući i recenziju za časopis** | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | | **PREDAVANJA (8 sati):**  **Što je to dobar časopis?…………… 4h P**  **Što su to predatorski časopisi i kako ih prepoznati?………….. 2h P**  **Recenzija u časopisu………… 2h P**  **SEMINARI (8 sati):**  **Odabir prikladnog časopisa za vlastiti članak ………………….… 4h S**  **Etički aspekti u znanstvenim časopisima, smjernice COPE………. 2h S**  **Recenziranje članka ……… 2h S** | | | | | | | | | | | |
| Vrste izvođenja nastave: | | * ☒ predavanja * ☒ seminari i radionice   ☐ vježbe  ☐*on line* u cijelosti  ☐ mješovito e-učenje  ☐ terenska nastava | | | | ☐ samostalni zadaci  ☐ multimedija  ☐ laboratorij  ☐ mentorski rad  ☐      (ostalo upisati) | | | | | | | |
|
| Obveze studenata | |  | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | | Pohađanje nastave |  | Istraživanje | | |  | Praktični rad | | | |  | |
| Eksperimentalni rad |  | Referat | | |  | (Ostalo upisati) | | | |  | |
| Esej |  | Seminarski rad | | |  | (Ostalo upisati) | | | |  | |
| Kolokviji |  | Usmeni ispit | | |  | (Ostalo upisati) | | | |  | |
| Pismeni ispit |  | Projekt | | |  | (Ostalo upisati) | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | | Seminarski rad. | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | | **Naslov** | | | | | | | **Broj primjeraka u knjižnici** | | **Dostupnost putem ostalih medija** | | |
| https://thinkchecksubmit.org/ | | | | | | |  | | Da | | |
| https://publicationethics.org/resources/guidelines-new/cope-ethical-guidelines-peer-reviewers | | | | | | |  | | Da | | |
| https://journalfinder.researcher-app.com/ | | | | | | |  | | Da | | |
| https://jane.biosemantics.org/ | | | | | | |  | | Da | | |
| Dopunska literatura | |  | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | | * Analiza kvalitete nastave od strane studenata i nastavnika * Analiza prolaznosti na ispitima * Izvješća Povjerenstva za kontrolu provedbe nastave * Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP) | | | | | | | | | | | |
| Ostalo (prema mišljenju predlagatelja) | |  | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **How to choose a scientific journal?** | | | | | | | | | | | | |
| **Code** | PT-IP29 | | | | Year of study | | | | 2 | | | | | |
| Course teacher | Prof. Ana Marušić, MD, PhD | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers | **Assist. Prof. Shelly Pranić, PhD** | | | | Type of instruction (number of hours) | | | | L | S | | E | | F |
| 8 | 8 | |  | |  |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Course objectives | The objective of the course is to understand and acquire knowledge and skills about publishing articles in scientific journals | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | Passed exams from the first year of the doctoral program | | | | | | | | | | | | | |
| Learning outcomes  expected at the level of the course (4 to 10 learning outcomes) | - Describe the characteristics of scientific journals and the measures of their quality.  - Describe, discriminate and explain the measures of journal quality, indexing and citations  - Name and explain the publication types in science – from copyright to creative commons licences  - Explain and critically judge the difference between legitimate and predatory journals  - Describe and explain ethical aspects in journal publishing, including the review process | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Lectures (8 hours):  What is a good journal? ……………4h  What are predatory journals and how to recognize them? ………..….. 2h  Reviewing for journals ………..….. 2h  Seminars (8 hours):  Choice of a journal for own work ……….. 4h  Ethical aspects of publishing, COPE guidance…..…2h  Reviewing articles ……………..2h | | | | | | | | | | | | | |
| Format of instruction | * ☒ lectures * ☒ seminars and workshops   ☐ exercises  ☐ *on line* in entirety  ☐ partial e-learning  ☐ field work | | | | | ☐ independent assignments  ☐ multimedia  ☐ laboratory  ☐ work with mentor  ☐       (other) | | | | | | | | |
|
| Student responsibilities |  | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | |  | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Seminar work  -. | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| https://thinkchecksubmit.org/ | | | | | | | |  | | Yes | | | |
| https://publicationethics.org/resources/guidelines-new/cope-ethical-guidelines-peer-reviewers | | | | | | | |  | | Yes | | | |
| https://journalfinder.researcher-app.com/ | | | | | | | |  | | Yes | | | |
| https://jane.biosemantics.org/ | | | | | | | |  | | Yes | | | |
| Optional literature (at the time of submission of study programme proposal) |  | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |
| Other (as the proposer wishes to add) |  | | | | | | | | | | | | | |

## 2. How to construct your own organ? (Kako napraviti vlastiti organ?)

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| **NAZIV PREDMETA** | **Kako napraviti vlastiti organ?** | | | | | | | | | | | | |
| **Kod** | | PT-IP28 | | | Godina studija | | | | 2 | | | | |
| **Nositelj/i predmeta** | | doc.dr.sc. Sandra Kostić | | | Bodovna vrijednost (ECTS) | | | | 3 | | | | |
| Suradnici | | dr.sc. Branka Bernard | | | Način izvođenja nastave (broj sati u semestru) | | | | P | S | | V | T |
| 8 | 8 | |  |  |
| Status predmeta | | Izborni | | | Postotak primjene e-učenja | | | | 20% | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | |
| Ciljevi predmeta | | Cilj nastave predmeta „Kako napraviti vlastiti organ?“ jest razumijevanje i usvajanje znanja o postupcima proizvodnje bioloških materijala (tkiva i organa), te osnova tkivnog inženjerstva | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | | Položeni ispiti prve godine poslijediplomskog studija | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | | - **Opisati ulogu biotehnologije u biomedicini te opisati, raščlaniti i objasniti osnove postupaka proizvodnje regenerativnih bioloških materijala**  **- Navesti i objasniti najvažnija dostignuća u području bioinženjerstva umjetnih organa i njihov terapeutski potencijal**  **- Objasniti i opisati proizvodnju specifičnih organa (tkiva): kože, hrskavice, kosti, srca, pluća, mokraćnog mjehura, spolnih organa…**  **- Objasniti primjenu 3D printera u biomedicini te nabrojati prednosti i nedostatke takve tehnologije**  **- Navesti i objasniti etičke aspekte u području tkivnog inženjerstva i regenerativne medicine** | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | | **PREDAVANJA:**  **Uvod u biotehnologiju; Bioinženjerstvo tkiva i organa kao alternativa lijekovima, genskoj terapiji i transplantaciji organa; Najvažnija dostignuća u području bioinženjerstva umjetnih organa i njihov terapeutski potencijal 4h P**  **Mogućnosti primjene kultura stanica za izradu tkiva i organa; Regenerativna medicina - primjena matičnih stanica; Primjena matičnih stanica u istraživanju i korištenje životinjskih modela 2h P**  **3D printeri u biomedicini…2h P**  **SEMINARI:**  **Proizvodnja specifičnih organa i tkiva (kože, hrskavice, kosti, srca, pluća, mokraćnog mjehura, spolnih organa, krvnih žila itd) 4hS**  **Etički aspekti u području tkivnog inženjerstva i regenerativne medicine 2h S**  **Analiziranje članaka….2h S** | | | | | | | | | | | |
| Vrste izvođenja nastave: | | * ☒ predavanja * ☒ seminari i radionice   ☐ vježbe  ☐*on line* u cijelosti  ☐ mješovito e-učenje  ☐ terenska nastava | | | | ☐ samostalni zadaci  ☐ multimedija  ☐ laboratorij  ☐ mentorski rad  ☐      (ostalo upisati) | | | | | | | |
|
| Obveze studenata | |  | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | | Pohađanje nastave |  | Istraživanje | | |  | Praktični rad | | | |  | |
| Eksperimentalni rad |  | Referat | | |  | (Ostalo upisati) | | | |  | |
| Esej |  | Seminarski rad | | |  | (Ostalo upisati) | | | |  | |
| Kolokviji |  | Usmeni ispit | | |  | (Ostalo upisati) | | | |  | |
| Pismeni ispit |  | Projekt | | |  | (Ostalo upisati) | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | | Seminarski rad (priprema i održavanje MS PPT prezentacije, na osnovu analize znanstvenih članaka o određenom organu ili tkivu). | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | | **Naslov** | | | | | | | **Broj primjeraka u knjižnici** | | **Dostupnost putem ostalih medija** | | |
| Vacanti J. Tissue engineering and regenerative medicine: from first principles to state of the art. J. Pediatr. Surg. 2010;45(2):291–294. | | | | | | |  | | Da | | |
| Atala A. Regenerative medicine strategies. J. Paediat. Surg. 2012; 47:17–28. | | | | | | |  | | Da | | |
| Atala A (2009) Engineering organs. Curr Opin Biotechnol 20: 575-592. | | | | | | |  | | Da | | |
| Sheyn D, Mizrahi O, Benjamin S, Gazit Z, Pelled G, Gazit D. Genetically modified cells in regenerative medicine and tissue engineering. Adv Drug Deliv Rev. 2010; 62:683–98. | | | | | | |  | | Da | | |
| [Shilpa PS](http://www.ncbi.nlm.nih.gov/pubmed?term=Shilpa%20PS%5BAuthor%5D&cauthor=true&cauthor_uid=23946728), [Kaul R](http://www.ncbi.nlm.nih.gov/pubmed?term=Kaul%20R%5BAuthor%5D&cauthor=true&cauthor_uid=23946728), [Sultana N](http://www.ncbi.nlm.nih.gov/pubmed?term=Sultana%20N%5BAuthor%5D&cauthor=true&cauthor_uid=23946728), [Bhat S](http://www.ncbi.nlm.nih.gov/pubmed?term=Bhat%20S%5BAuthor%5D&cauthor=true&cauthor_uid=23946728). (2013) Stem cells: Boon to dentistry and medicine. [Dent Res J](http://www.ncbi.nlm.nih.gov/pubmed/23946728) 10 (2):149-54. | | | | | | |  | | Da | | |
| Dopunska literatura | | Meyer U, Meyer TH, Handschel J, Wiesmann HP (2009) Fundamentals of Tissue Engineering and Regenerative Medicine, Springer, New York | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | | * Analiza kvalitete nastave od strane studenata i nastavnika * Analiza prolaznosti na ispitima * Izvješća Povjerenstva za kontrolu provedbe nastave * Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP) | | | | | | | | | | | |
| Ostalo (prema mišljenju predlagatelja) | |  | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **How to construct your own organ?** | | | | | | | | | | | | |
| **Code** | PT-IP28 | | | | Year of study | | | | 2 | | | | | |
| Course teacher | Assistant prof. Sandra Kostić, PhD, MSc in Molecular Biotechnology | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers | **Branka Bernard, PhD** | | | | Type of instruction (number of hours) | | | | L | S | | E | | F |
| 8 | 8 | |  | |  |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Course objectives | The course objective is understanding the concept of production of regenerative biological materials (tissues and organs) and the basic principles of tissue engineering | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | Passed exams from first year of the doctoral program | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | - Describe the role of biotechnology in biomedicine; describe and explain  the basic principles in the production of regenerative biological materials (tissues and organs)  - Name and explain the most relevant achievements in the field of bioengineering of artificial organs and their therapeutic potential  - Describe, discriminate and explain bioengineering process for the specific tissues and organs  - Explain and critically judge the application of 3D printers in bioengineering and name the advantages and disadvantages of this technology  - Describe and explain ethical aspects in the field of tissue engineering and regenerative medicine | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Lectures (8 hours):  Introduction to biotechnology; Bioengineering of the tissues and organs as an alternative to drugs, gene therapy and organ transplantation; The most relevant achievements in the field of bioengineering of artificial organs and their therapeutic potential …4h  The possibilities of using the cell culture for production of tissues and organs; Regenerative medicine – application of the stem cells; Application of the stem cells in research and the use of animal models… 2h  3D printers in biomedicine… 2h    Seminars (8 hours):  Construction of the specific organs and tissues (skin, cartilage, bone, heart, bladder, blood vessels, vagina) … 4h  Ethical aspects in the field of tissue engineering and regenerative medicine…2h  Analysis of the scientific articles……..2h | | | | | | | | | | | | | |
| Format of instruction | * ☒ lectures * ☒ seminars and workshops   ☐ exercises  ☐ *on line* in entirety  ☐ partial e-learning  ☐ field work | | | | | ☐ independent assignments  ☐ multimedia  ☐ laboratory  ☐ work with mentor  ☐       (other) | | | | | | | | |
|
| Student responsibilities |  | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | |  | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Seminar presentation – the assignment in which students need to analyze the articles about the construction of the specific organ and create a MS PPT presentation in which they will present thiese articles. | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Vacanti J. Tissue engineering and regenerative medicine: from first principles to state of the art. J. Pediatr. Surg. 2010;45(2):291–294. | | | | | | | |  | | Yes | | | |
| Atala A. Regenerative medicine strategies. J. Paediat. Surg. 2012; 47:17–28. | | | | | | | |  | | Yes | | | |
| Atala A (2009) Engineering organs. Curr Opin Biotechnol 20: 575-592. | | | | | | | |  | | Yes | | | |
| Sheyn D, Mizrahi O, Benjamin S, Gazit Z, Pelled G, Gazit D. Genetically modified cells in regenerative medicine and tissue engineering. Adv Drug Deliv Rev. 2010; 62:683–98. | | | | | | | |  | | Yes | | | |
| [Shilpa PS](http://www.ncbi.nlm.nih.gov/pubmed?term=Shilpa%20PS%5BAuthor%5D&cauthor=true&cauthor_uid=23946728), [Kaul R](http://www.ncbi.nlm.nih.gov/pubmed?term=Kaul%20R%5BAuthor%5D&cauthor=true&cauthor_uid=23946728), [Sultana N](http://www.ncbi.nlm.nih.gov/pubmed?term=Sultana%20N%5BAuthor%5D&cauthor=true&cauthor_uid=23946728), [Bhat S](http://www.ncbi.nlm.nih.gov/pubmed?term=Bhat%20S%5BAuthor%5D&cauthor=true&cauthor_uid=23946728). (2013) Stem cells: Boon to dentistry and medicine. [Dent Res J](http://www.ncbi.nlm.nih.gov/pubmed/23946728) 10 (2):149-54. | | | | | | | |  | | Yes | | | |
| Vacanti J. Tissue engineering and regenerative medicine: from first principles to state of the art. J. Pediatr. Surg. 2010;45(2):291–294. | | | | | | | |  | | Yes | | | |
| Optional literature (at the time of submission of study programme proposal) | Meyer U, Meyer TH, Handschel J, Wiesmann HP (2009) Fundamentals of Tissue Engineering and Regenerative Medicine, Springer, New York | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |
| Other (as the proposer wishes to add) |  | | | | | | | | | | | | | |

## 3. The Puzzle of Pain (Zagonetka boli)

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| **Naziv predmeta** | | | **Zagonetka boli** | | | | | | | | | | | |
| **Kod** | PT-IP01 | Godina studija | | | | | | TRIBE, 2. godina | | | | | | |
| **Nositelj/i predmeta** | prof. dr. sc. Damir Sapunar | Bodovna vrijednost (ECTS) | | | | | | 3 | | | | | | |
| Suradnici |  | Način izvođenja nastave (broj sati u semestru) | | | | | | P | | S | | V | T |  |
| 12 | | 4 | | 0 | 16 |
| Status predmeta | Izborni | Postotak primjene e-učenja | | | | | | 20% | | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | |
| Ciljevi predmeta | Razumijevanje i usvajanje temeljnih znanstvenih i kliničkih znanja neophodnih za multidisciplinarni pristup liječenju boli | | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema preduvjeta | | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | Nakon položenog predmeta student će moći:  - opisati različite vrste boli,  - opisati temeljne neurobiološke principe nastanka boli,  - navesti najvažnije institucije koje se bave istraživanjem boli,  - objasniti i kritički evaluirati fenomen placeba i noceba,  - analizirati temeljne probleme u istraživanju boli,  - analizirati uzroke opioidne krize,  - analizirati alternativne pristupe liječenju boli. | | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | Definicija i taksonomija boli, EFIC i IASP: misija i ciljevi; neurobiologija boli; životinjski modeli u istraživanju boli, kliničke studije u istraživanju boli: medicina utemeljena na dokazima; placebo i nocebo; psihosocijalni i kulturološki aspekt boli; liječenje boli i klinike za liječenje boli; alternativne metode liječenja boli; opioidna kriza. | | | | | | | | | | | | | |
| Vrste izvođenja nastave: | predavanja | | | | | | | ☐ ☐       (ostalo upisati) | | | | | | |
|
| Obveze studenata | Nazočnost na nastavi 80% predavanja | | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave | 2 | |  |  |  | | | | |  | | | |
| Seminarski rad |  | |  |  |  | | | | |  | | | |
| Pismeni ispit | 1 | |  |  |  | | | | |  | | | |
|  |  | |  |  |  | | | | |  | | | |
|  |  | |  |  |  | | | | |  | | | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu |  | | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | **Broj primjeraka u knjižnici** | | **Dostupnost putem ostalih medija** | | | | | |
| Handouts i izabrene znanstvene publikacije. | | | | | |  | | *Dostupno na Internetu i u PDF-obliku* | | | | | |
| Dopunska literatura | Znanstveni članci | | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **The Puzzle of Pain** | | | | | | | | | | | | |
| **Code** | PT-IP01 | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Professor Damir Sapunar | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers |  | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 12 | 4 | | 0 | | 10 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aim of the course | Understand and adopt basic scientific and clinical information essential for understanding of the pain research and multidisciplinary management | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | After passing the course the student will be able to:  - describe different types of the pain  - describe the basic neurobiological principles of pain,  - list the most important institutions dealing with pain research,  - explain and critically evaluate the placebo and nocebo phenomenon,  - analyze and explain the fundamental problems in pain research,  - analyze the causes of opioid crisis,  - analyze alternative approaches to pain treatment. | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | |  | | --- | | Definition and taxonomy of pain, EFIC and IASP: mission and goals; Neurobiology of Pain; Animals models of pain, Clinical studies about treatments for pain: evidence-based medicine, Placebo and nocebo, Psychosocial and cultural aspects of pain, Pain management and pain clinics; alternative therapies for the treatment of pain; opioid crisis. | | | | | | | | | | | | | | |
| Format of instruction | Lectures | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | | 2 | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 1 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Handouts and selected scientific publications. | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature |  | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

## 4. Seeing the invisible (Gledanje nevidljivog)

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| **Naziv predmeta** | | | | **Gledanje nevidljivog** | | | | | | | | | | |
| **Kod** | PT-IP03 | Godina studija | | | | TRIBE, 2. godina | | | | | | | | |
| **Nositelj/i predmeta** | prof. dr. sc. Damir Sapunar | Bodovna vrijednost (ECTS) | | | | 3 | | | | | | | | |
| Suradnici |  | Način izvođenja nastave (broj sati u semestru) | | | | P | S | | V | | T |  | | |
| 10 | 6 | | 0 | | 14 |
| Status predmeta | Izborni | Postotak primjene e-učenja | | | | 20% | | | | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | |
| Ciljevi predmeta | Razumijevanje i usvajanje temeljnih principa klasične, konfokalne i super rezolucijske mikroskopije. | | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema preduvjeta | | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | Nakon položenog predmeta student će moći:  - opisuju različite vrste klasičnih mikroskopa,  - objasniti princip konfokalne mikroskopije,  - objasniti rezolucijski limit,  - objasniti principe super rezolucijske mikroskopije,  - navesti nove tehnologije koje se koriste u 3D mikroskopiji. | | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | Klasične mikroskopske tehnike; tehnike konfokalne mikroskopije; F tehnike; deconvolucija; super rezolucijska mikroskopija, LED iluminacija, quantum dots; Stimulated Emission Depletion (STED) Microscopy; Total Internal Reflection Fluorescence Microscopy (TIRF). | | | | | | | | | | | | | |
| Vrste izvođenja nastave: | predavanja | | | | | ☐ ☐       (ostalo upisati) | | | | | | | | |
|
| Obveze studenata | Nazočnost na nastavi 80% predavanja | | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave |  |  | |  | | |  | | | | | |  |
| Seminarski rad |  |  | |  | | |  | | | | | |  |
| Pismeni ispit | 3 |  | |  | | |  | | | | | |  |
|  |  |  | |  | | |  | | | | | |  |
|  |  |  | |  | | |  | | | | | |  |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu |  | | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | |
| Handouts i izabrene znanstvene publikacije. | | | | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | |
| Dopunska literatura | Znanstveni članci | | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **Seeing the invisible** | | | | | | | | | | | | |
| **Code** | PT-IP03 | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Professor Damir Sapunar | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers |  | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 10 | 4 | | 0 | | 14 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aim of the course | The learning outcome is the understanding of the main principles of classical upright, confocal, super resolution microscopy | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | After passing the course the student will be able to:  - describe different types of classical microscopes,  - explain the principle of confocal microscopy,  - explain and explain the fundamental problems of resolution limits,  - explain the principles of super resolution microscopy,  - list new technologies used in 3D microscopy. | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | |  | | --- | | Classical microscopy techniques; techniques of confocal microscopy; F techniques; deconvolution; super resolution microscopy; LED illumination; quantum dots; Stimulated Emission Depletion (STED) Microscopy; Total Internal Reflection Fluorescence Microscopy (TIRF). | | | | | | | | | | | | | | |
| Format of instruction | Lectures | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 2 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Handouts and selected scientific publications. | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature |  | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

## 5. Quasi-experimental and non-experimental research methods (Kvazieksperimentalne i neeksperimentalne metode istraživanja)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NAZIV PREDMETA | Kvazieksperimentalne i neeksperimentalne metode istraživanja | | | | | | | | | | | | |
| **Kod** | | PT-IP24 | | | Godina studija | | | | 2 | | | | |
| **Nositelj/i predmeta** | | dr. sc. Darko Hren | | | Bodovna vrijednost (ECTS) | | | | 3 | | | | |
| Suradnici | |  | | | Način izvođenja nastave (broj sati u semestru) | | | | P | S | | V | T |
| 12 | 8 | | 0 |  |
| Status predmeta | | Izborni | | | Postotak primjene e-učenja | | | | 20% | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | |
| Ciljevi predmeta | | Upoznati studente s kvazieksperimentalnim i neeksperimentalnim metodama istraživanja te ih osposobiti da samostalno isplaniraju takvo istraživanje | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | | Položeni ispiti prve godine poslijediplomskog studija. | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | | Nakon uspješno položenog kolegija studenti će moći:  - opisati i objasniti temeljne vrste kvazieksperimentalnih nacrta istraživanja;  - opisati i objasniti temeljne vrste neeksperimentalnih nacrta istraživanja;  - usporediti prijetnje valjanosti u različitim vrstama kvazieksperimentalnih i neeksperimentanih istraživanja te vrednovati njihova rješenja;  - objasniti razlike kvantitativnog i kvalitativnog pristupa istraživanjima;  - usporediti prednosti i nedostatke kvantitativnog i kvalitativnog pristupa istraživanjima;  - usporediti koncepte *valjanosti* u kvantitativnim istraživanjima sa *vjerodostojnošću* u kvalitativnim istraživanjima. | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | | Valjanost znanstvenog istraživanja (1P+2S)  Kvazieksperimentalni nacrti istraživanja (4P+1S) Korelacijska/opservacijska istraživanja (2P+2S) Kvalitativne metode istraživanja (4P+1S)  Vjerodostojnost kvalitativnog istraživanja (1P+2S) | | | | | | | | | | | |
| Vrste izvođenja nastave: | | ☒ predavanja  ☒ seminari i radionice  ☐ vježbe  ☐*on line* u cijelosti  ☐ mješovito e-učenje  ☐ terenska nastava | | | | ☐ samostalni zadaci  ☐ multimedija  ☐ laboratorij  ☐ mentorski rad  ☐      (ostalo upisati) | | | | | | | |
|
| Obveze studenata | | Pohađanje nastave, izrada seminarskog rada i položeni ispit. | | | | | | | | | | | |
| Praćenje rada studenata (upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta*):* | | Pohađanje nastave | 1 | Istraživanje | | |  | Praktični rad | | | |  | |
| Eksperimentalni rad |  | Referat | | |  | (Ostalo upisati) | | | |  | |
| Esej |  | Seminarski rad | | | 1 | (Ostalo upisati) | | | |  | |
| Kolokviji |  | Usmeni ispit | | |  | (Ostalo upisati) | | | |  | |
| Pismeni ispit | 1 | Projekt | | |  | (Ostalo upisati) | | | |  | |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | | Seminarski rad i pismeni ispit donose po 50% konačne ocjene. | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | | **Naslov** | | | | | | | **Broj primjeraka u knjižnici** | | **Dostupnost putem ostalih medija** | | |
| Milas G. Istraživačke metode u psihologiji i drugim društvenim znanostima. Jastrebarsko, Slap. 2005. | | | | | | |  | |  | | |
| Shadish WR, Cook, TD, Campbell DT. Experimental and quasi-experimental designs for generalized causal inference. Boston, Cengage Learning. 2001. | | | | | | |  | |  | | |
| Braun V, Clarke V. Successful qualitative research: A practical guide for beginners. London, Thousand Oaks, Sage. 2013. | | | | | | |  | |  | | |
| Dopunska literatura | | Pripremljeni nastavni materijali. | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | | * Analiza kvalitete nastave od strane studenata i nastavnika * Analiza prolaznosti na ispitima * Izvješća Povjerenstva za kontrolu provedbe nastave * Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP) | | | | | | | | | | | |
| Ostalo (prema mišljenju predlagatelja) | |  | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **Quasi-experimental and non-experimental research methods** | | | | | | | | | | | | |
| **Code** | PT-IP24 | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Prof. D. Hren | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers |  | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 12 | 8 | | 0 | | 0 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 20% | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aims of the course | Introduce students to quasiexperimental and nonexperimental study designs and enable them to plan such a study. | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | Successful completion of all the courses from the 1st year of graduate study | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | After successfully completing the course students will be able to:  - describe and explain basic types of quasiexperimental study designs;  - describe and explain basic types of nonexperimental study designs;  - compare threats to validity between different types of quasi- and nonexperimental study designs and evaluate solutions to those threats;  - explain the differences between quantitative and qualitative approaches to scientific research;  - compare the strengths and weaknesses of quantitative and qualitative approach to scientific research;  - compare the concept of *validity* in quantitative research to trustworthiness in qualitative reserach. | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Validity of a scientific study (1P+2S)  Quasiexperimental study designs (4P+1S) Correlational/observational study designs (2P+2S) Qualitative research methods (4P+1S)  Trustworthiness of a qualitative study (1P+2S) | | | | | | | | | | | | | |
| Format of instruction | lectures, seminar and practicals | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | Class attendance, seminar paper, written exam. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | | 1 | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | | 1 | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 1 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Seminar paper and and written exam will each make 50% of the final grade. | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Milas G. Istraživačke metode u psihologiji i drugim društvenim znanostima. Jastrebarsko, Slap. 2005. | | | | | | | |  | |  | | | |
| Shadish WR, Cook, TD, Campbell DT. Experimental and quasi-experimental designs for generalized causal inference. Boston, Cengage Learning. 2001. | | | | | | | |  | |  | | | |
| Braun V, Clarke V. Successful qualitative research: A practical guide for beginners. London, Thousand Oaks, Sage. 2013. | | | | | | | |  | |  | | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

## 6. The Cochrane Library and evidence in medicine (Cochrane knjižnica i dokazi u medicini)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Naziv predmeta** | | | | | Cochrane knjižnica i dokazi u medicini | | | | | | | | | | |
| **Kod** | PT-IP10 | | Godina studija | | | TRIBE, 2. godina | | | | | | | | | |
| **Nositelj/i predmeta** | Prof. dr. sc. Livia Puljak | | Bodovna vrijednost (ECTS) | | | 3 | | | | | | | | | |
| Suradnici | doc. dr. sc. Irena Zakarija Grković | | Način izvođenja nastave (broj sati u semestru) | | | P | | S | V | | | T |  | | |
| 18 | | 0 | 2 | | | 0 |
| Status predmeta | Izborni | | Postotak primjene e-učenja | | | 0 | | | | | | | | | |
| **OPIS PREDMETA** | | | | | | | | | | | | | | | |
| Ciljevi predmeta | Razumijevanje i usvajanje znanja o medicini utemeljenoj na dokazima, hijerarhiji dokaza u medicini, ocjenjivanju dokaza u medicini, izvorima informacija medicine utemeljene na dokazima, Cochrane kolaboraciji i Cochrane knjižnici | | | | | | | | | | | | | | |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | Nema preduvjeta | | | | | | | | | | | | | | |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja) | Nakon položenog predmeta student će moći:  - opisati sto je medicina utemeljena na dokazima  - opisati hijerarhiju dokaza u medicini  - samostalno pretraživati literaturu za pronalaženje najboljih izvora informacija o medicini utemeljenoj na dokazima  - samostalno pretražiti Cochrane knjižnicu  - opisati dijelove Cochraneovog sustavnog pregleda | | | | | | | | | | | | | | |
| Sadržaj predmeta detaljno razrađen prema satnici nastave | U okviru predmeta će se obraditi sljedeće cjeline:  Medicina utemeljena na dokazima (2 h P)  Organizacija Cochrane (2 h P)  Ustroj Cochraneove kolaboracije (2 h P)  Cochraneova knjižnica (2 h P)  Sustavni pregledni članak (4 h P)  Dijelovi Cochraneovog sustavnog preglednog članka (2 h P)  PRISMA smjernice i AMSTAR (2 h P)  Pretraživanje Cochraneove knjižnice (2 h P)  Pristup cjelovitim tekstovima Cochraneovih članaka (1 h V)  Kako se registrirati za izradu Cochraneovog članka (1 h V) | | | | | | | | | | | | | | |
| Vrste izvođenja nastave: | Predavanja i vježbe | | | | | ☐ ☐       (ostalo upisati) | | | | | | | | | |
|
| Obveze studenata | Nazočnost na nastavi 80% predavanja, 100% vježbe | | | | | | | | | | | | | | |
| Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara bodovnoj vrijednosti predmeta):* | Pohađanje nastave |  | |  | | |  | | |  | | | | |  |
| Seminarski rad |  | |  | | |  | | | (Ostalo upisati) | | | | |  |
| Pismeni ispit | 2 | |  | | |  | | | (Ostalo upisati) | | | | |  |
|  |  | |  | | |  | | | (Ostalo upisati) | | | | |  |
|  |  | |  | | |  | | | (Ostalo upisati) | | | | |  |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Pisani ispit | | | | | | | | | | | | | | |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | | | | | | | | | | **Broj primjeraka u knjižnici** | | | **Dostupnost putem ostalih medija** | |
| Priručnik:  Cochrane Handbook for Systematic Reviews of Interventions. Version 6.1, 2020. Dostupno na: <https://training.cochrane.org/handbook/current> | | | | | | | | | |  | | | *Dostupno na Internetu i u PDF-obliku* | |
| Dopunska literatura | Dodatni nastavni materijali koje je pripremio nastavnik. | | | | | | | | | | | | | | |
| Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja | -Analiza kvalitete nastave od strane studenata i nastavnika,  -Analiza prolaznosti na ispitima,  -Izvješća Povjerenstva za kontrolu provedbe nastave,  -Izvaninstitucijska evaluacija (posjet timova za kontrolu kvalitete Nacionalne agencije za kontrolu kvalitete, uključenje u TEEP). | | | | | | | | | | | | | | |

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| **NAME OF THE COURSE** | | **The Cochrane Library and evidence in medicine** | | | | | | | | | | | | |
| **Code** | PT-IP10 | | | | Year of study | | | | TRIBE, 2nd year | | | | | |
| Course teacher | Prof. Livia Puljak, MD, PhD | | | | Credits (ECTS) | | | | 3 | | | | | |
| Associate teachers | Prof. Irena Zakarija Grković, MD, PhD | | | | Type of instruction (number of hours) | | | | L | S | | E | | T |
| 18 | 0 | | 2 | | 0 |
| Status of the course | Elective | | | | Percentage of application of e-learning | | | | 0 | | | | | |
| **COURSE DESCRIPTION** | | | | | | | | | | | | | | |
| Aims of the course | Understanding and acquiring knowledge about evidence-based medicine, hierarchy of evidence in medicine, assessing quality of medicine, parts of a Cochrane systematic review, organization Cochrane, and Cochrane Library | | | | | | | | | | | | | |
| Course enrolment requirements and entry competences required for the course | None | | | | | | | | | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | After passing the course, a student will be able to:  - describe what is evidence-based medicine  - describe hierarchy of evidence in medicine  - independently search the literature to find sources of evidence-based information  - independently search Cochrane Library  - describe parts of a Cochrane review | | | | | | | | | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | Within the course, the students will be taught the following:  Evidence-based medicine (lecture; 2 h)  Cochrane (lecture; 2 h)  Cochrane entities (lecture; 2 h)  The Cochrane Library (lecture; 2 h)  Systematic review as a study design (lecture; 4 h)  Cochrane systematic review (lecture; 2 h)  PRISMA checklist and AMSTAR (lecture; 2 h)  Searching the Cochrane Library (lecture; 2 h)  Accessing the full texts of Cochrane reviews (practical; 1 h)  Registering for a Cochrane review (practical; 1 h) | | | | | | | | | | | | | |
| Format of instruction | lectures, and practice work | | | | | ☐       (other) | | | | | | | | |
|
| Student responsibilities | In accordance to Rules of studying and Deontological code for USSM students. | | | | | | | | | | | | | |
| Screening student work *(name the proportion of ECTS credits for each* *activity so that the total number of ECTS credits is equal to the ECTS value of the course)* | Class attendance | |  | Research | | |  | Practical training | | | | |  | |
| Experimental work | |  | Report | | |  | (Other) | | | | |  | |
| Essay | |  | Seminar essay | | |  | (Other) | | | | |  | |
| Tests | |  | Oral exam | | |  | (Other) | | | | |  | |
| Written exam | | 2 | Project | | |  | (Other) | | | | |  | |
| Grading and evaluating student work in class and at the final exam | Written exam | | | | | | | | | | | | | |
| Required literature (available in the library and via other media) | **Title** | | | | | | | | **Number of copies in the library** | | **Availability via other media** | | | |
| Online handbook:  Cochrane Handbook for Systematic Reviews of Interventions. Version 6.1, 2020. Dostupno na: <https://training.cochrane.org/handbook/current> | | | | | | | |  | | Internet and in PDF format | | | |
| Optional literature | Materials prepared by the course teacher | | | | | | | | | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | * Teaching quality analysis by students and teachers * Exam passing rate analysis * Committee for control of teaching reports * External evaluation | | | | | | | | | | | | | |

Popis obveznih i izbornih predmeta prema dopusnici

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| **POPIS PREDMETA** | | | | | | | |
| Godina studija: 1 | | | | | | | |
| Semestar: 1-2 | | | | | | | |
| STATUS | KOD | PREDMET | SATI U SEMESTRU | | | | ECTS |
| P | S | V | T |
| Obvezni | PT-OP11 | Principles of research in biomedicine | 46 | 64 | 22 |  | 20 |
| PT-OP12 | Transferable skills | 40 | 18 | 26 |  | 10 |
| PT-OP13 | Progress report I |  | 10 |  |  | 5 |
| PT-OP14 | Progress report II |  | 10 |  |  | 5 |
| Ukupno obvezni | | 86 | 102 | 48 |  | 40 |
| Izborni |  |  |  |  |  |  |  |
| Napisati koliko se bira izbornih predmeta: **Na prvoj godini nema izbornih predmeta** | | | | | | |

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| **POPIS PREDMETA** | | | | | | | |
| Godina studija: 2 | | | | | | | |
| Semestar: 3-4 | | | | | | | |
| STATUS | KOD | PREDMET | SATI U SEMESTRU | | | | ECTS |
| P | S | V | T |
| Obvezni | PT-OP15 | Progress report III |  | 10 |  |  | 5 |
| PT-OP16 | Progress report IV |  | 10 |  |  | 5 |
| Ukupno obvezni | |  | 20 |  |  | 10 |
| Izborni | PT-IP01 | The puzzle of pain | 10 | 4 |  |  | 2 |
| PT-IP14 | Glycobiology of hematopoiesis | 2 | 4 | 10 |  | 2 |
| PT-IP15 | Glycobiology of immune system | 4 | 6 | 5 |  | 2 |
| PT-IP02 | Adventures of pain in the brain | 10 | 6 |  |  | 2 |
| PT-IP17 | Genetic analysis of complex diseases | 4 | 5 | 6 |  | 2 |
| PT-IP03 | Seeing the invisible | 10 | 6 |  |  | 2 |
| PT-IP05 | Development of human spinal ganglia | 6 | 4 | 4 |  | 2 |
| PT-IP18 | Amphioxus - a model for chordate’s evolution | 5 | 5 | 5 |  | 2 |
| PT-IP19 | Basis of heart electrophysiology and bioenergetics | 3 | 5 | 7 |  | 2 |
| PT-IP20 | Colon cancer | 4 | 6 | 5 |  | 2 |
| PT-IP06 | Genome databases and statistics | 4 | 4 | 4 |  | 2 |
| PT-IP08 | Diagnostics of genetic and chromosomal diseases | 7 | 4 | 4 |  | 2 |
| PT-IP21 | Oxidative stress and protection mechanisms - The role of uric acid | 6 | 4 | 5 |  | 2 |
| PT-IP12 | Multivariate statistics | 4 | 6 | 4 |  | 2 |
| PT-IP14 | Why and how we breathe? | 6 | 5 | 14 |  | 2 |
| PT-IP23 | Animal models in the stroke research | 6 | 4 | 4 |  | 2 |
| PT-IP24 | Quasi-experimental and non-experimental research designs | 10 | 10 |  |  | 2 |
| PT-IP25 | Communication in living organisms | 6 | 4 | 4 |  | 2 |
| PT-IP26 | The role of ubiquitin in health and diseases | 4 | 6 | 5 |  | 2 |
| PT-IP09 | Translational research of hearing and speech | 10 | 6 | 4 |  | 2 |
| PT-IP10 | The Cochrane Library and evidence in medicine | 5 | 5 | 5 |  | 2 |
| PT-OP5 | Methods for isolation of bioactive substances | 10 | 6 |  |  | 2 |
| PT-IP31 | Brain Mapping: From Neural Basis of Cognition to Surgical Applications | 6 | 4 | 4 |  | 2 |
| PT-IP28 | How to construct your own organ? | 6 | 10 |  |  | 2 |
| PT-OP3 | Molecular and biochemical methods in biomedical research | 4 | 4 | 6 |  | 2 |
| PT-IP29 | How to choose a scientific journal? | 6 | 4 |  |  | 2 |
| PT-IP32 | The alphabet of a good night’s sleep | 4 | 7 | 4 |  | 2 |
| PT-IP33 | Systematic review and meta-analysis | 5 | 5 | 5 |  | 2 |
| Napisati koliko se bira izbornih predmeta: **Potrebno je izabrati predmete koji nose ukupno 20 ECTS** | | | | | | |

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| **POPIS PREDMETA** | | | | | | | |
| Godina studija: 3 | | | | | | | |
| Semestar: 5-6 | | | | | | | |
| STATUS | KOD | PREDMET | SATI U SEMESTRU | | | | ECTS |
| P | S | V | T |
| PT-OP17 | Progress report V |  | 10 |  |  | 5 |
| PT-OP18 | Progress report VI |  | 10 |  |  | 5 |
| Ukupno obvezni | |  | 20 |  |  | 10 |
| Izborni |  |  |  |  |  |  |  |
| Napisati koliko se bira izbornih predmeta: **Na trećoj godini nema izbornih predmeta** | | | | | | |

Popis obveznih i izbornih predmeta izmijenjenog studijskog programa

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| **POPIS PREDMETA** | | | | | | | |
| Godina studija: 1 | | | | | | | |
| Semestar: 1-2 | | | | | | | |
| STATUS | KOD | PREDMET | SATI U SEMESTRU | | | | ECTS |
| P | S | V | T |
| Obvezni | PT-OP11 | Principles of research in biomedicine | 58 | 78 | 14 |  | 20 |
| PT-OP12 | Transferable skills | 40 | 24 | 16 |  | 10 |
| PT-OP13 | Progress report I |  | 10 |  |  | 5 |
| PT-OP14 | Progress report II |  | 10 |  |  | 5 |
| Ukupno obvezni | | 98 | 122 | 30 |  | 30 |
| Izborni |  |  |  |  |  |  |  |
| Napisati koliko se bira izbornih predmeta: **Na prvoj godini nema izbornih predmeta** | | | | | | |

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| **POPIS PREDMETA** | | | | | | | |
| Godina studija: 2 | | | | | | | |
| Semestar: 3-4 | | | | | | | |
| STATUS | KOD | PREDMET | SATI U SEMESTRU | | | | ECTS |
| P | S | V | T |
| Obvezni |  | **Na drugoj godini studija nema obaveznih predmeta** |  |  |  |  |  |
| Izborni |  | |  |  |  |  |  |
| PT-IP18 | Amphioxus - a model for chordate’s evolution | 5 | 5 | 5 |  | 2 |
| PT-IP23 | Animal models in the stroke research | 6 | 4 | 4 |  | 2 |
|  | A step-by-step guide to conducting a systematic review | 18 | 0 | 2 |  | 3 |
| PT-IP19 | Basis of heart electrophysiology and bioenergetics | 3 | 5 | 7 |  | 2 |
| PT-IP31 | Brain Mapping: From Neural Basis of Cognition to Surgical Applications | 6 | 4 | 4 |  | 2 |
| PT-IP20 | Colon cancer | 4 | 6 | 5 |  | 2 |
|  | Communication standards for manuscript submission to a scientific journals | 4 | 2 | 4 |  | 2 |
| PT-IP05 | Development of human spinal ganglia | 6 | 4 | 4 |  | 2 |
| PT-IP08 | Diagnostics of genetic and chromosomal diseases | 7 | 4 | 4 |  | 2 |
| PT-IP17 | Genetic analysis of complex diseases | 4 | 5 | 6 |  | 2 |
| PT-IP06 | Genome databases and statistics | 4 | 4 | 4 |  | 2 |
| PT-IP14 | Glycobiology of hematopoiesis | 2 | 4 | 10 |  | 2 |
| PT-IP15 | Glycobiology of immune system | 4 | 6 | 5 |  | 2 |
| PT-IP29 | How to choose a scientific journal? | 8 | 8 |  |  | 3 |
| PT-IP28 | How to construct your own organ? | 8 | 8 |  |  | 3 |
| PT-OP3 | Molecular and biochemical methods in biomedical research | 4 | 4 | 6 |  | 2 |
| PT-IP12 | Multivariate statistics | 4 | 6 | 4 |  | 2 |
| PT-IP21 | Oxidative stress and protection mechanisms - The role of uric acid | 6 | 4 | 5 |  | 2 |
| PT-IP07 | Plasticity of neurochemical gradient | 6 | 6 |  |  | 2 |
| PT-IP24 | Quasi-experimental and non-experimental research designs | 12 | 8 |  |  | 3 |
| PT-IP03 | Seeing the invisible | 10 | 6 |  |  | 3 |
| PT-IP32 | The alphabet of a good night’s sleep | 4 | 7 | 4 |  | 2 |
| PT-IP10 | The Cochrane Library and evidence in medicine | 18 |  | 2 |  | 3 |
| PT-IP01 | The puzzle of pain | 12 | 4 |  |  | 3 |
| PT-IP26 | The role of ubiquitin in health and diseases | 4 | 6 | 5 |  | 2 |
|  | The science of breastfeeding and lactation | 10 | 4 |  |  | 3 |
| PT-IP09 | Translational research of hearing and speech | 10 | 6 | 4 |  | 2 |
| PT-IP14 | Why and how we breathe? | 6 | 5 | 14 |  | 2 |
|  | Writing a doctoral thesis | 18 | 0 | 2 |  | 3 |
| Napisati koliko se bira izbornih predmeta: **Potrebno je izabrati predmete koji nose ukupno 12 ECTS** | | | | | | |

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| **POPIS PREDMETA** | | | | | | | |
| Godina studija: 3 | | | | | | | |
| Semestar: 5-6 | | | | | | | |
| STATUS | KOD | PREDMET | SATI U SEMESTRU | | | | ECTS |
| P | S | V | T |
| PT-OP17 | Progress report V |  | 10 |  |  | 5 |
| PT-OP18 | Progress report VI |  | 10 |  |  | 5 |
| Ukupno obvezni | |  | 20 |  |  | 10 |
| Izborni |  |  |  |  |  |  |  |
| Napisati koliko se bira izbornih predmeta: **Na trećoj godini nema izbornih predmeta** | | | | | | |