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| **Naziv predmeta** | **Upoznajmo bubreg** |
| **Kod** | MFMI128 | Godina studija | 1., 2., 3., 4. i 5. |
| **Nositelj/i predmeta** | Izv. prof. dr. sc. Katarina Vukojević, dr. med. | Bodovna vrijednost (ECTS) |      2 |
| Suradnici | Prof. dr. sc. Mirna Saraga-BabićDoc. dr. sc. Snježana Mardešić, Doc. dr. sc. Natalija Filipović,Doc. dr. sc. Sandra Kostić. | Način izvođenja nastave (broj sati u semestru) | P | S | V | T |  |
| 10 | 10 | 5 |  |
| Status predmeta |      Izborni | Postotak primjene e-učenja  |  |
| **OPIS PREDMETA** |
| Ciljevi predmeta | Cilj predmeta je naučiti studenta o normalnom razvoju bubrega, anatomiji, fiziologiji i kongenitalnim anomalijama genitourinarnog trakta. |
| Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet | nema |
| Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja)  | Identificirati, opisati i objasniti najvažnija obilježja razvoja genitourinarnog sustava, anatomije, fiziologije i struktura na razini tkiva, organa i cijelog tijela.Navesti i objasniti promjene koje se javljaju u genitourinarnom sustava zbog razvojnih anomalija.Kritički prosuditi obrazovne materijale (članke i predavanja), sudjelovati u raspravama i konstruirajju mišljenja.Primijeniti usvojeno znanje za predviđanje funkcije genitourinarnog sustava u zdravlju i bolesti.Primijeniti stečena teorijska znanja za rješavanje praktičnih problema. |
| Sadržaj predmeta detaljno razrađen prema satnici nastave  | predavanja (15 sati): broj sati:Razvoj genitourinarnog trakta 3Čimbenici koji su uključeni u normalni razvoj bubrega 3Kongenitalne anomalije bubrega i mokraćnog sustava (CAKUT) 3Gentska pozadina CAKUT-a 3Anatomija i fiziologija bubrega 3 Seminari (5 sati): broj sati:Novi dijagnostički pristup CAKUT-u 2Kritičko čitanje literature o CAKUT-u 3Vježbe (5 sati): broj sati:Histološka analiza razvoja donjeg mokraćnog trakta u čovjeka i miša 2Histološka analiza razvoja bubrega u čovjeka i miša 2 Laboratorijska praksa i pregled metodologije 1 |
| 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 | 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 | 1ECTS |  |       |  |       |
| Seminarski rad |       |  |       |       (Ostalo upisati) |       |
| Pismeni ispit |       |  |       |       (Ostalo upisati) |       |
| Usmeni ispit | 1ECTS |  |       |       (Ostalo upisati) |       |
|  |       |  |       |       (Ostalo upisati) |       |
| Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu | Usmeni ispit |
| Obvezna literatura (dostupna u knjižnici i putem ostalih medija) | **Naslov** | **Broj primjeraka u knjižnici** | **Dostupnost putem ostalih medija** |
| Mutations in DSTYK and Dominant Urinary Tract MalformationsS. Sanna-Cherchi, R.V. Sampogna, N. Papeta M. Bodria, Y. Liu, P.L. Weng, V.J. Lozanovski, M. Verbitsky, F. Lugani, R. D. Kosuljandic Vukic, K. **Vukojevic, M. Saraga-Babic, M. Saraga** F. Scolari, R. Ravazzolo, K. Kiryluk, Q. Al-Awqati, V.D. D’Agati, I.A. Drummond, V. Tasic, R.P. Lifton, G.M. Ghiggeri, and A.G. Gharavi |  | *svemrežje* |
| Copy number variation analysis identifies novel CAKUT candidate genes in children with a solitary functioning kidney.Westland R, Verbitsky M, **Vukojevic K**, Perry BJ, Fasel DA, Zwijnenburg PJ, Bökenkamp A, Gille JJ, **Saraga-Babic M**, Ghiggeri GM, D'Agati VD, Schreuder MF, Gharavi AG, van Wijk JA, Sanna-Cherchi S. |  | *svemrežje* |
| CAKUT genetics in mice and menGeorgina Caruana and John F. Bertram |  | *svemrežje* |
| Review Congenital Anomalies of the Kidney and UrinaryTract: An Embryogenetic ReviewAugusto Cesar Soares dos Santos Junior, Debora Marques de Miranda, and Ana Cristina Sim~oes e Silva |  | *svemrežje* |
| To bud or not to bud: the RET perspective in CAKUTT. Keefe Davis & Masato Hoshi & Sanjay Jain |  | *svemrežje* |
| Congenital anomalies of the kidney and urinary tract (CAKUT) associated with Hirschsprung’s disease: a systematic reviewAlejandro D. Hofmann, Johannes W. Duess, Prem Puri |  | *svemrežje* |
| Ureter growth and differentiation. Tobias Bohnenpoll, Andreas Kispert |  | *svemrežje* |
| Next-generation sequencing for research and diagnostics in kidney disease. Kirsten Y. Renkema, Marijn F. Stokman, Rachel H. Giles and Nine V. A. M. Knoers |  | *svemrežje* |
| Congenital Anomalies of the Kidney and the UrinaryTract (CAKUT). Maria M. Rodriguez |  | *svemrežje* |
| Functional Models for Congenital Anomalies of the Kidney and Urinary TractGlenn van de Hoek, Nayia Nicolaou, Rachel H. Giles, Nine V.A.M. Knoers, Kirsten Y. Renkema, Ernie M.H.F. Bongers |  | *svemrežje* |
| Single-gene causes of congenital anomalies of the kidneyand urinary tract (CAKUT) in humansAsaf Vivante & Stefan Kohl & Daw-Yang Hwang &Gabriel C. Dworschak & Friedhelm Hildebrandt |  | *svemrežje* |
| Renal Complications in 6p Duplication Syndrome: Microarray-Based Investigation of the CandidateGene(s) for the Development of CongenitalAnomalies of the Kidney and Urinary Tract (CAKUT) and Focal Segmental Glomerular Sclerosis (FSGS)Megumi Yoshimura-Furuhata |       | *svemrežje* |
| Dopunska literatura  | Junqueira LC, Carneiro J, Kelley RO. Osnove histologije, 13. izdanje: Text and AtlasSadler TW. Langmanova medicinska embriologija, 12. izdanjeSapunar D, Saraga Babić M. Puljak L, Vukojevic K, Lovric-Kojundzić S, Carev D. Histološki atlas. Sveučilište u Splitu Medicinski fakultet, Split, HrvatskaSobotta – Histološki atlasMoore KL, Dalley AF, Agur, AMR. Klinički orijentirana anatomija (6. Ili 7. izdanje). Philadelphia: Lippincott Williams & Wilkins, 2000Netter FH. Atlas of human anatomy. Basel: Novartis, 1998Sinopsisi sa predavanja |
| 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** | **Hello Kidney** |
| **Code** | MFMI128 | Year of study | 1st, 2nd, 3rd, 4th,5th |
| Course teacher | Associate professor Katarina Vukojević, MD. PhD. MSc. | Credits (ECTS) | 2 |
| Associate teachers | Full professor Mirna Saraga-Babić, MD. PhD. MSc.Assistant professor Snježana Mardešić, MD. PhD.Assistant professor Natalija Filipović, DVM. PhD.Assistant professor Sandra Kostić, PhD. MSc. | Type of instruction (number of hours) | L | S | E | T |
| 10 | 10 | 5 |  |
| Status of the course | Elective | Percentage of application of e-learning |  |
| **COURSE DESCRIPTION** |
| Course enrolment requirements and entry competences required for the course | Objective of Hello Kidney is to teach student about normal kidney development, anatomy, physiology and congenital anomalies of genitourinary tract. |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | Identify, describe and explain the most important characteristics of genitourinary system development, anatomy, physiology and structures at the level of the tissue, organ and whole body.Name and explain changes that occur in genitourinary system because of developmental anomalies.Critically judge educational materials (articles and lectures), participate in argumentative discussions and construct opinions.Apply adopted knowledge to predict function of genitourinary system in health and diseases.Use acquired theoretical knowledge for solving practical problems. |
| Course content broken down in detail by weekly class schedule (syllabus) | Lectures (15 hours): Number of hours:Development of genitourinary tract 3Factors involved in normal kidney development 3Congenital anomalies of kidney and urinary tract (CAKUT) 3Genetic background of CAKUT 3Kidney anatomy and physiology 3 Seminars (5 hours): Number of hours:New diagnostic approaches to CAKUT 2Critical review of CAKUT literature 3Exercises (5 hours): Number of hours:Histological analysis of human and mouse development of lower urinary tract 2Histological analysis of human and mouse kidney development 2Laboratory practice and methodology overview 1 |
| 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 | 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 ECTS | Research |       | Practical training |       |
| Experimental work |       | Report |       |       (Other) |       |
| Essay |       | Seminar essay |       |       (Other) |       |
| Tests |       | Oral exam | 1 ECTS |       (Other) |       |
| Written exam |       | Project |       |       (Other) |       |
| Grading and evaluating student work in class and at the final exam | Students will have an assignment in which they need to analyze an article and answer to 5 questions from the analyzed article. |
| Required literature (available in the library and via other media) | **Title** | **Number of copies in the library** | **Availability via other media** |
| Mutations in DSTYK and Dominant Urinary Tract MalformationsS. Sanna-Cherchi, R.V. Sampogna, N. Papeta M. Bodria, Y. Liu, P.L. Weng, V.J. Lozanovski, M. Verbitsky, F. Lugani, R. D. Kosuljandic Vukic, K. **Vukojevic, M. Saraga-Babic, M. Saraga** F. Scolari, R. Ravazzolo, K. Kiryluk, Q. Al-Awqati, V.D. D’Agati, I.A. Drummond, V. Tasic, R.P. Lifton, G.M. Ghiggeri, and A.G. Gharavi |       | online |
| Copy number variation analysis identifies novel CAKUT candidate genes in children with a solitary functioning kidney.Westland R, Verbitsky M, **Vukojevic K**, Perry BJ, Fasel DA, Zwijnenburg PJ, Bökenkamp A, Gille JJ, **Saraga-Babic M**, Ghiggeri GM, D'Agati VD, Schreuder MF, Gharavi AG, van Wijk JA, Sanna-Cherchi S. |       | online |
| CAKUT genetics in mice and menGeorgina Caruana and John F. Bertram |       | online |
| Review Congenital Anomalies of the Kidney and UrinaryTract: An Embryogenetic ReviewAugusto Cesar Soares dos Santos Junior, Debora Marques de Miranda, and Ana Cristina Sim~oes e Silva |       | online |
| To bud or not to bud: the RET perspective in CAKUTT. Keefe Davis & Masato Hoshi & Sanjay Jain |       | online |
| Congenital anomalies of the kidney and urinary tract (CAKUT) associated with Hirschsprung’s disease: a systematic reviewAlejandro D. Hofmann, Johannes W. Duess, Prem Puri |  | online |
| Ureter growth and differentiation. Tobias Bohnenpoll, Andreas Kispert |       | online |
| Next-generation sequencing for research and diagnostics in kidney disease. Kirsten Y. Renkema, Marijn F. Stokman, Rachel H. Giles and Nine V. A. M. Knoers |  | online |
| Congenital Anomalies of the Kidney and the UrinaryTract (CAKUT). Maria M. Rodriguez |  | online |
| Functional Models for Congenital Anomalies of the Kidney and Urinary TractGlenn van de Hoek, Nayia Nicolaou, Rachel H. Giles, Nine V.A.M. Knoers, Kirsten Y. Renkema, Ernie M.H.F. Bongers |  | online |
| Single-gene causes of congenital anomalies of the kidneyand urinary tract (CAKUT) in humansAsaf Vivante & Stefan Kohl & Daw-Yang Hwang &Gabriel C. Dworschak & Friedhelm Hildebrandt |  | online |
| Renal Complications in 6p Duplication Syndrome: Microarray-Based Investigation of the CandidateGene(s) for the Development of CongenitalAnomalies of the Kidney and Urinary Tract (CAKUT) and Focal Segmental Glomerular Sclerosis (FSGS)Megumi Yoshimura-Furuhata |       | online |
| Optional literature (at the time of submission of study programme proposal) | Junqueira LC, Carneiro J, Kelley RO. Basic Histology, 13th Edition: Text and AtlasSadler TW. Langman's Medical Embryology, 12th EditionSapunar D, Saraga Babić M. Puljak L, Vukojevic K, Lovric-Kojundzić S, Carev D. Histology atlas on CD. University of Split School of Medicine, Split, CroatiaSobotta – Histology atlasMoore KL, Dalley AF, Agur, AMR. Clinically oriented anatomy (sixth edition or seven edition). Philadelphia: Lippincott Williams & Wilkins, 2000Netter FH. Atlas of human anatomy. Basel: Novartis, 1998Handouts from lectures |
| 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) |       |