UNIVERZITET U SARAJEVU STOMATOLOŠKI FAKULTET SA KLINIKAMA

DOKTORSKI STUDIJ

(III ciklus studija na Stomatološkom fakultetu u Sarajevu)

Doktorski studij - reformisani curriculum

Sarajevo, 2015.

NASTAVNI PLAN

1. OPĆI DIO

1.1. Naziv studija, znanstveno područje

Doktorski studij na Stomatološkom fakultetu Univerziteta u Sarajevu pripada znanstvenom području biomedicina i zdravstvo.

1.2. Nositelj studija

Nositelj studija je Univerzitet u Sarajevu. Univerzitet povjerava organizaciju i izvođenje programa Stomatološkom fakultetu u Sarajevu. Pravila studiranja određena su pravilima studiranja za treći ciklus studija Univerziteta u Sarajevu koji je donio Senat Univerziteta u Sarajevu.

1.3. Uvjeti upisa na studij

Na studij se mogu, pod jednakim uvjetima, upisati kandidati iz Bosne i Hercegovine i inozemstva koji su, u pravilu, završili Stomatološki fakultet .

U skladu sa odlukom Senata Univerziteta u Sarajevu broj: 01-260/20 od 30.09.2020.godine, *za fakultete Vijeća Grupacije medicinskih nauka (izuzev Veterinarskog fakulteta), za kliničke oblasti, kandidat ne može upisati doktorski studij bez položenog specijalističkog ispita.*

Kandidatu koji nije završio univerzitetski integrirani studij stomatologije Vijeće za doktorski studij moţe pri upisu na doktorski studij odrediti polaganje pojedinih predmeta ili dijelova predmeta (razlikovne predmete) iz univerzitetskog integriranog studija stomatologije. Kandidati koji su završili studij u inozemstvu ili su odslušali dio nastave na studiju u inozemstvu moraju proći postupak akademskog priznavanja inozemne visokoškolske kvalifikacije ili ekvivalencije odslušanog dijela nastave.

Obavezno je poznavanje engleskog jezika na nivou koja omogućava komunikaciju putem govora i pisma, praćenje znanstvene i nastavne literature, pisanje znanstvenih radova i upotrebu računalnih programa.

1.4. Kriteriji i postupci odabira polaznika

Upis na doktorski studij provodi se na bazi javnog konkursa. Odluku o raspisivanju konkursa za upis na doktorski studij, na prijedlog Vijeća za doktorski studij, donosi Nastavno-naučno vijeće Fakulteta, uz saglasnost Senata Univerziteta u Sarajevu.

Bliţe odredbe o raspisivanju javnog konkursa za upis na studij, prijemnom postupku i upisu studenata na studij odreĎene su Pravilima studiranja za treći ciklus studija na Univerzitetu u Sarajevu.

Upis studenata na doktorski studij obavljat će se na osnovu prijemnog postupka, bez obaveze polaganja prijemnog ispita.

Kandidati za doktorski studij koji ispunjavaju uvjete upisa bit će izabrani u prijemnom postupku na osnovu slijedećih kriterija:

- uspjeha u dosadašnjem studiju,
- demonstriranja rezultata znanstveno-istraživačkog rada, - motivacije za znanstveno-istraživački rad.

Uspjeh u dosadašnjem studiju i demonstriranje rezultata znanstveno-istraživačkog rada dokazuje se konkursnom dokumentacijom (kopije radova, knjiga i dr.).

2. OPIS PROGRAMA

2.1. Struktura programa

Doktorski studij traje 3 godine (6 semestara) i uz primjereno zalaganje i kontinuiran rad omogućuje ravnomjerno opterećenje studenata. Doktorski studij se vrednuje sa najmanje 180 ECTS bodova (za završetak studija i svih propisanih obaveza u trajanju od najmanje 3 godine), odnosno najmanje 60 ECTS bodova godišnje (rad potreban za svladavanje jedne akademske godine je najmanje 60 ECTS). Studijskim programom stiče se naučno zvanje doktora stomatoloških nauka.

Doktorski studij se sastoji iz:

1. pohađanja nastave i praćenja vrednovanja rezultata kroz utvrđene provjere znanja,
2. izbora naučne oblasti u okviru koje će se raditi doktorska disertacija i izbora mentora,
3. definiranja naučne oblasti,
4. prijave i prezentacije izabrane teme, pristupa i naučnog metoda doktorske disertacije/rada,
5. naučnoistraživačkog i praktičnog rada na izradi doktorske disertacije,
6. objavljivanja dijelova istraživanja u referentnim časopisima, 7. odbrane rezultata rada doktorske disertacije,
8. javne odbrane doktorske disertacije.

Studijski program realizira se kroz nastavu, naučno-istraživački rad i izradu i odbranu doktorske disertacije. Nastavni proces se izvodi kroz predavanja, seminare, konsultacije, vođene praktikume te druge utvrđene oblike nastave.

Nastavni program čine: studijske oblasti, obavezni moduli (metodološki predmeti), granski predmeti vođeni praktikumi, te istraživački rad.
U prvom semestru studija organizirana je jedinstvena nastava za sve studente iz grupe metodoloških predmeta, a u drugom semestru nastava iz kolegija (granskih predmeta) koje student bira od 10 ponuđenih kolegija (predmeta) koje odgovaraju matičnim oblastima Stomatološkog fakulteta Univerziteta u Sarajevu. U prvoj godini student mora odabrati područje naučnog djelovanja i akademskog savjetnika (potencijalnog mentora), te izraditi Individualni plan studiranja koji odobrava Vijeće postdiplomskog studija. U drugoj godini studiranja student treba dostaviti prijedlog teme doktorske disertacije (projekat) i pristupiti odbrani istog. U trećoj godini student pristupa izradi doktorske disertacije. Doktorski kandidat je obavezan prije obrane doktorskog rada imati objavljen ili prihvaćen za objavljivanje najmanje jedan znanstveni rad, tematski vezan za doktorsko istraţivanje.

Doktorski studij temelji se na neposrednom naučnoistraživačkom radu doktorskog kandidata na doktorskoj tezi, uz superviziju kompetentnog mentora. Stoga je najvaţnija obavezna naučna aktivnost doktorskog kandidata, individualni naučnoistraživački rad na doktorskoj tezi. Studij se završava savladavanjem svih propisanih studijskih obaveza - polaganjem svih ispita, izradom doktorskog rada, savladavanjem uvjeta postavljenih za znanstveni rad i prijavu gotovog doktorskog rada, te javnom odbranom doktorskog rada.

Program predloženog doktorskog studija obuhvata:

1.organiziranu nastavu - 60 ECTS
2.rad na doktorskoj disertaciji - 120 ECTS koja se sastoji iz:
- izvannastavne znanstvene aktivnosti iz oblasti doktorske disertacije - rada na pripremi i pisanju doktorske disertacije

Svi doktorski kandidati duţni su steći minimalno 180 ECTS za završetak studija.

Nakon završetka trećeg ciklusa studija student:

- pokazuje sposobnost samostalnog istraţivačkog rada u oblasti studija, te samostalnost primjene vještina i metoda istraţivanja u svojoj oblasti,
- pokazuje sposobnost sintetiziranja, eksplikacije, oblikovanja, primjenjivanja, dizajniranja, implementacije i prihvatanja procesa zasnovanih na nauci,
- originalnim istraţivanjem doprinosi proširenju granica znanja naučnim radom, čiji neki dijelovi zasluţuju objavu u domaćim i međunarodno referentnim publikacijama,
- sposoban je za kritičku analizu, evaluaciju i sintezu novih i kompleksnih ideja i
- promovira, u akademskom i profesionalnom kontekstu, tehnološki, društveni ili kulturni napredak u društvu zasnovanom na znanju.

2.2. Organizirana nastava

Iz organizirane nastave doktorski kandidat mora steći ukupno najmanje 60 ECTS bodova za dovršenje studija. Doktorski kandidat mora steći najmanje 30 ECTS iz prve bodovne skupine (metodološki predmeti) i najmanje 30 ECTS iz druge bodovne skupine (kolegiji).

U dogovoru sa akademskim savjetnikom doktorski kandidat moţe izabrati bilo koji predmet iz ponuđenih izbornih modula.

Kandidatima za upis koji su stekli titulu magistra stomatoloških nauka prije uvoĎenja Bolonjskog sistema integriranog studija priznaje se 60 ECTS bodova (organizirane nastavne aktivnosti). Preostali obim od 120 ECTS bodova ovi studenti trebaju steći radom na doktorskoj disertaciji kroz izvannastavne znanstvene aktivnosti iz oblasti doktorske disertacije, te rada na pripremi i pisanju doktorske disertacije

Na bazi sklopljenih unutaruniverzitetskih, međuuniverzitetskih i/ili međufakultetskih sporazuma, studenti doktorskog studija na Stomatološkom fakultetu u Sarajevu imat će mogućnost upisivanja, slušanja i polaganja ispita iz predmeta doktorskih studija iz područja stomatoloških nauka, koji nisu u administrativnoj nadleţnosti Stomatološkog fakulteta u Sarajevu. Kandidati koji su odslušali dio nastave na studiju u inozemstvu moraju proći postupak ekvivalencije odslušanog dijela nastave. Predmeti su podijeljeni u dvije bodovne skupine:

Metodološki predmeti

Metodološki predmeti predstavljaju obavezan modul koji se sastoji iz predmeta koji se jedinstveno slušaju tokom prvog semestra studija. Svaki student je duţan upisati najmanje 30 ECTS bodova iz te skupine. Metodološki predmeti namijenjeni su sticanju osnovnih principa bavljenja naučno-istraţivačkim radom, pri čemu se studenti upoznaju s osnovama naučnog rada i postupcima u istraţivanju. Cilj metodoloških predmeta je sticanje temeljnih znanstvenih vještina, znanja i stavova neophodnih za istraţivački rad u znanstvenom području stomatologije. Svrha modula je osposobljavanje doktorskih kandidata u teorijskim i praktičnim aspektima koji su preduvjet za uspješno savladavanje doktorskog studija i izobrazbu za znanstvenoistraţivački rad. Svi predmeti obaveznog modula se obavezno upisuju, slušaju i polaţu. Predmeti obaveznog modula upisuju se u prvi dio Individualnog plana studija, indeks i zapisnik o ispitima.

Kolegiji- granski usmjereni predmeti

U drugom semestru student odabire kolegije od 10 ponuĎenih matičnih oblasti Stomatološkog fakulteta Univerziteta u Sarajevu, od kojih ukupno uz voĎene praktikume mora imati minimalno 30 ECTS bodova. Granski predmeti upisuju se u Individualni plan studija, indeks i zapisnik o ispitima. U dogovoru sa akademskim savjetnikom, doktorski kandidat moţe izabrati bilo koji predmet iz ponuĎenih granskih predmeta. S liste ponuĎenih kolegija doktorski kandidat će, u dogovoru sa mentorom, slobodno izabrati one

koji su bliski metodologiji i/ili sadrţaju teme doktorskog rada. U studijskom programu unutar kolegija bit će ponuĎeni predmeti koji obuhvataju raznolike sadrţaje iz naučnih oblasti Stomatološkog fakulteta Univerziteta u Sarajevu.

Kolegiji se slušaju u prvoj godini studija i sastoje se od granski usmjerenih predmeta koji obuhvaćaju savremene naučne spoznaje, znanja i probleme u uţim granama stomatologije: morfologija zuba s dentalnom antropologijom i forenzikom, dentalna patologija s endodoncijom, stomatološka protetika s dentalnom implantologijom, oralna medicina i parodontologija, preventivna stomatologija i pedodoncija, ortodoncija, oralna hirurgija s dentalnom implantologijom, maksilofacijalna hirurgija, dentalna implantologija i dentalna radiologija. Cilj izbornih modula, predmeta i praktikuma je rješavanje specifičnih metodoloških i/ili sadrţajnih znanstvenih pitanja vezanih uz znanstvenoistraţivački rad doktorskog kandidata na doktorskoj tezi.

Nastava u sklopu granski usmjerenih predmeta sastoji se iz predavanja, seminara i voĎenih praktikuma. Oblici nastavnih aktivnosti su: predavanja koja će drţati nastavnici Stomatološkog fakulteta, Medicinskog fakulteta, gostujući profesori iz inostranstva, kao i stručnjaci iz drugih naučno-istraţivačkih ustanova sa verificiranim zakonskim kompetencijama , voĎeni praktikumi i učešće na seminarima i konsultacijama, koji će se redovno organizirati u toku studija.

Za izračunavanje ECTS bodova u prijedlogu organizirane nastave doktorskog studija korištena je preporučena metodologija, usporediva sa metodologijom primijenjenom za evropske doktorske studije iz područja biomedicine i zdravstva. Bodovna vrijednost je rezultat procjene ukupnog opterećenja studenata potrebnog za svladavanje nastave i polaganje ispita. Jedan ECTS bod je ekvivalent ukupnom opterećenju studenta od 25 kontaktnih sati (40 sedmica nastave po godini x 37,5 radnih sati sedmično/60). Ukupno opterećenje na semestralnom nivou od 750 radnih sati. Bodovna vrijednost predmeta i praktikuma je indikator ukupnog opterećenja doktorskog kandidata na osnovu procjene količine ukupnog rada potrebnog za savladavanje svih oblika aktivne nastave, proučavanje literature potrebne za nastavu i ispit, te za savladavanje samog ispita. Aktivna nastava je ponderirana na sljedeći način: broj sati predavanja x 1, broj sati seminara x 1.5 i broj sati voĎenog praktikuma x 2 (P/S/V = 1/1,5/2). Ponder opterećenja studenta nastavom veći je za seminare i voĎene praktikume od pondera za predavanje, jer se kandidati moraju unaprijed pripremiti za seminare i praktikume proučavanjem odgovarajuće literature, a na praktikumima rade i praktični rad. Ponderirani broj sati svih oblika nastave predmeta se zbroji, podijeli sa 25 i zaokruţi na jednu decimalu, kako bi se dobilo ukupno opterećenje za aktivnu nastavu predmeta izraţeno u ECTS bodovima.

Kategorije ispita su: 1) usmeni ispit 2) pismeni ispit (esej, kratki esej, modificirani esej, pitanja višestrukog izbora) 3) praktični ispit (praktični zadatak, kratki projekt, organizirani strukturirani praktični ispit).

Opterećenje nastavom (u ECTS bodovima) = (Px1)+(S x1,5) + (V x 2)/ 25

Opterećenje literaturom za nastavu i ispit temelji se na procjeni da je 1 ECTS bod (25 sunčanih sati) ekvivalent napora za savladavanje 100 stranica literature doktorske razine studija. Kao standard uzeli smo 8 stranica literature po satu nastave. Broj ECTS bodova za literaturu izračunali smo po formuli ispod i zaokruţili na jednu decimalu. Opterećenje literaturom (u ECTS bodovima) = (P+S+V) x 8/100

ECTS bodovi za opterećenje nastavom i literaturom su potom zbrojeni i pomnoţeni sa ponderom za provjeru znanja ispitom. Ponderi za pojedini oblik ispita su sljedeći: usmeni ispit 1,1; pismeni esej 1,1; ostali oblici pismenog testa (kratki esej, modfiicirani esej, pitanja višestrukog izbora) 1,25; praktični ispit 1,5; ponder za kombinirani pismeni i usmeni ili praktični ispit je zbroj pojedinačnih pondera.

Dobiveni umnoţak ECTS bodova je zaokruţen na cijeli broj ili pola cijelog broja. Taj broj je konačna vrijednost ECTS bodova za pojedini predmet i/ili praktikum.

Ukupno ECTS bodova = (ECTS nastava + ECTS literatura) x ponder ispita

2.3. Rad na doktorskoj disertaciji

Doktorski studij temelji se na neposrednom znanstveno-istraţivačkom radu doktorskog kandidata na doktorskoj disertaciji, uz superviziju kompetentnog mentora. Doktorski kandidat treba biti na različite načine aktivno uključen u naučnoistraživačku djelatnost. Uobičajena mjerila za valoriziranje znanstvene aktivnosti su, uz publiciranje znanstvenih radova, izlaganja znanstvenih rezultata na kongresima, konferencijama, simpozijima u zemlji i inostranstvu. Istraţivački dio studijskog programa moţe obuhvatati i boravak na ciljanom naučnom usavršavanju na drugom laboratoriju, institutu ili klinici u zemlji ili inozemstvu. Naučna aktivnost na doktoralnom studiju provodi se tokom cijelog studija, a na drugoj i trećoj godini je predviĐena intenzivna suradnja s mentorom, seminarski rad, seminari tipa savremene literature, publikovanje rada te sudjelovanje na seminarima i naučnim skupovima.

Stoga je najvaţnija obavezna znanstvena aktivnost doktorskog kandidata, individualni Znanstveno-istraživački rad na doktorskoj disertaciji. On obuhvata:

a. izvannastavne znanstvene aktivnosti iz oblasti doktorske disertacije
b. rad na pripremi i pisanju doktorske disertacije

Iz ovih aktivnosti svaki student duţan je prikupiti za završetak studija ukupno najmanje 120 ECTS bodova, od čega na rad na pisanju projekta, praktični rad na materijalu doktorske disertacije i rad na pisanju finalne verzije doktorske disertacije vrijedi 75 ECTS bodova. 120 ECTS bodova je ekvivalent znanstveno-istraţivačkom radu u trajanju od četiri semestra (dvije akademske godine) sa punim radnim vremenom.

2.4. Oblici i bodovanje izvannastavnih znanstvenih aktivnosti iz oblasti doktorske disertacije

U skladu sa evropskim preporukama, istraţivački dio studijskog programa valorizira se kroz:

- in extenso, izvorne znanstvenoistraţivačke publikacije u kojima je doktorski kandidat autor ili koautor,
- boravkom na ciljanom znanstvenom usavršavanju u drugom laboratoriju /institutu/ klinici, u zemlji i inostranstvu,
- sudjelovanjem na znanstvenim skupovima.

Ovim oblicima izvannastavne znanstvene aktivnosti kandidat mora skupiti 45 ECTS bodova.

***Znanstveno-istraživačke publikacij*e:**

In extenso, izvorne znanstveno-istraţivačke publikacije trebaju biti vezane za temu doktorske disertacije i publicirane u znanstvenim časopisima sa međunarodnom recenzijom.

In extenso izvorni znanstveni rad objavljen u časopisu je različito bodovan zavisno od meĐunarodne baze podataka u kojoj je taj časopis indeksiran i autorskog doprinosa:

- indeksiran u bazi Current Contents (CC) ili Science Citation Index (SCI) (prvi autor/koautorstvo).....15 ECTS

- indeksiran u relevantnim meĐunarodno priznatim bazama (prvi autor/koautor) .....10 ECTS

Preduslov za bodovanje koautorstva je da koautorski doprinos kandidata u radu mora biti jasno vidljiv.

Ovim sistemom bodovanja priznat će se i publikacije iz oblasti teme doktorske disertacije koje su objavljene u periodu do 3 godine prije upisa na doktorski studij i to do maksimalno 15 ECTS bodova.

Publikacijom Znanstveno-istraživačkih publikacija kandidat moţe steći maksimalno 30 ECTS bodova.

Preduslov za predaju radne verzije doktorske disertacije kandidata je objavljen jedan rad u kojem je doktorant prvi autor ili koautor u časopisu koji je citiran u bazi Current Contents (CC) ili u bazi Science Citation Index (SCI). Rad mora biti iz oblasti doktorske disertacije. Na ovaj način kandidat stiče dodatnih obaveznih 15 ECTS bodova. Ovaj rad mora biti publiciran nakon upisa doktorskog studija.

Studijski boravci u inozemstvu:

U okviru izvannastavnih znanstvenih aktivnosti bodovat će se studijski boravci u inozemstvu u trajanju od najmanje 1 mjesec (1 mjesec=10 ECTS bodova) a najviše 1 semestar (1 semestar=30 ECTS bodova). Boravak na znanstveno-istraţivačkom radu mora biti prijavljen Vijeću za doktorski studij Stomatološkog fakulteta u Sarajevu. Doktorski kandidat mora priloţiti dokumentaciju kojom dokazuje svoje sudjelovanje na ciljanom znanstvenoistraţivačkom usavršavanju u drugom laboratoriju /institutu/klinici.

Sudjelovanje na znanstvenim skupovima:

Uobičajena mjerila za valoriziranje znanstveno-istraţivačke aktivnosti su uz publiciranje znanstvenih radova, i izlaganja znanstvenih radova na kongresima, konferencijama, simpozijima u zemlji i inozemstvu.

Iz ovih izvannastavnih znanstvenih aktivnosti svaki student moţe skupiti u toku studija maksimalno 15 ECTS bodova, kako je to prikazano na Tabeli 1. Na ovaj način bodovat će se i sudjelovanje na znanstvenim skupovima u periodu do 3 godine prije upisa na doktorski studij, ukoliko je tema izlaganja i prezentacije u oblasti teme doktorske disertacije.

Tabela 1. Bodovanje izvannastavne znanstvene aktivnosti kroz sudjelovanja na znanstvenim skupovima.

Aktivno sudjelovanje doktoranta na znanstvenim skupovima	**ECTS BOD**
Usmeno izlaganje i sažetak koji prati međunarodna baza podataka na međunarodnom znanstvenom skupu	10
Poster i sažetak na međunarodnom znanstvenom skupu	5
Usmeno izlaganje i saţetak na domaćem skupu	5
Poster i sažetak na domaćem znanstvenom skupu	2,5

2.5. Izrada i odbrana doktorske disertacije

Tema disertacije se temelji na planu, programu i metodologiji originalnih istraţivanja utvrĎenom u prijavi teme. Student je duţan prijaviti temu doktorske disertacije u drugoj

godini studija (u trećem semestru). Svi studenti upisani u doktorski studij mogu pokrenuti postupak prijave i prihvatanja teme doktorske disertacije odmah po ispunjenju uvjeta (kad prikupe 60 ECTS) koji podrazumijevaju i poloţene ispite iz metodološke grupe predmeta.

Doktorant završava studij javnom odbranom doktorske disertacije. Valorizirat će se sve aktivnosti koje prethode izradi finalne verzije, a obuhvataju: - pisanje projekta doktorske disertacije
- praktični rad na materijalu doktorske disertacije - pisanje finalne verzije doktorske disertacije.

Ove aktivnosti nose ukupnu vrijednost od 75 ECTS-a.

Gotovu doktorsku tezu treba predati na ocjenu krajem šestog semestra. Završetkom organiziranog dijela studijskog programa smatrat će se dan kada je student predao na ocjenu gotovu doktorsku disertaciju. Završetkom studija smatrat će se dan kada je javno odbranjen doktorski rad.

Tabela 2. Pregled bodovanja prema vrsti znanstvene aktivnosti.

	Naziv	**Oblici aktivnosti**	**Minimalan broj bodova**
Organizirana nastava	Obavezna nastavna aktivnost (metodološki predmeti)	Predavanja, vježbe, seminari kroz nastavu iz obaveznih predmeta	30 ECTS
	Izborna nastavna aktivnost (kolegiji-granski predmeti)	Predavanja, vježbe, seminari,voĎeni praktikumi kroz nastavu iz obaveznih predmeta	30 ECTS
			Maksimalan broj bodova
Rad na doktorskoj disertaciji	Izvannastavni znanstveni rad iz oblasti doktorske disertacije (potrebno minimalno 45 ECTS)	Znanstveno-istraživački radovi, izlaganja znanstvenih rezultata na stručno-naučnim skupovima a koji su objavljeni do tri godine prije upisa na doktorski studij	15 ECTS
		Znanstveno-istraživački radovi koji su objavljeni do tri godine nakon upisa na doktorski studij	30 ECTS

		Znanstveno-istraživački rad u kojem je doktorant prvi autor ili koautor u časopisu koji je citiran u bazi Current Contents (CC) ili u bazi Science Citation Index (SCI) iz oblasti doktorske disertacije objavljen nakon upisa u doktorski studij *	15 ECTS
		Studijski boravci u laboratoriju/ institutu/ klinici u inostranstvu	30 ECTS
		Izlaganja znanstvenih rezultata na kongresima, konferencijama, simpozijima u zemlji i inozemstvu	15 ECTS
	Rad na pripremi i odbrani doktorske disertacije (75 ECTS)	Priprema i pisanje projekta doktorske disertacije	15 ECTS
		Praktičan rad na materijalu doktorske disertacije	30 ECTS
		Pisanje finalne verzije doktorske disertacije	30 ECTS
Ukupno 180 ECTS			

*Ova aktivnost je obavezna i uslov je za predaju doktorske disertacije.

3. RITAM STUDIRANJA I OBAVEZE STUDENATA

3.1. Obaveze doktorskih kandidata u prvoj godini

1. Odslušani i položeni predmeti obaveznog modula metodološke skupine predmeta u vrijednosti 30 ECTS.
2. Odslušani granski predmeti (kolegiji) u vrijednosti od najmanje 30 ECTS.
3. Odabrano područje naučnog djelovanja i akademski savjetnik kandidata (potencijalni mentor).
4. IzraĎen i odobren Individualni plan studija.

Student treba uz pomoć odabranog mentora doktorata izraditi i predati svoj Individualni plan studija Vijeću za doktorski studij sukladno članu 31. Pravila studiranja za treći ciklus studija na Univerzitetu u Sarajevu. Individualni plan treba predati Vijeću za doktorski studij u prvoj godini studija, a najkasnije do kraja II semestra studija. Vijeće za doktorski studij odobrava cjelokupni Individualni plan studija najkasnije do upisa u III semestar, odnosno drugu godinu studija. Individualni plan studija supotpisuju mentor doktorata i student.

Individualni plan sadrži:

- podatke o doktorskom kandidatu i mentoru;
- podatke o području naučnog djelovanja i grani u kojoj će raditi doktorsku disertaciju;
- podatke o kolegijima (granskim predmetima) koje planira slušati i polagati u toku 2. godine studija.

GODINA STUDIJA	PLAN	ECTS	UKUPNO
1. GODINA STUDIJA (I I II SEMESTAR)	1. Metodološki predmeti (obavezna nastavna aktivnost) 1. **METODOLOGIJA NAUČNO-ISTRAŢIVAČKOG RADA** 2. **EPIDEMIOLOŠKE METODE I BIOSTATISTIKA U STOMATOLOSKOJ NAUCI I PRAKSI** 3. **BIOLOŠKE OSNOVE OROFACIJALNOG SISTEMA** 4. **PUBLIKOVANJE U BIOMEDICINSKIM NAUKAMA**	30	60
	2. Kolegiji- granski predmeti (izborna nastavna aktivnost) 1. **MORFOLOGIJA ZUBA SA DENTALNOM ANTROPOLOGIJOM I FORENZIKOM** 2. **DENTALNA PATOLOGIJA S ENDODONCIJOM** 3. **STOMATOLOŠKA PROTETIKA SA DENTALNOM IMPLANTOLOGIJOM** 4. **ORALNA MEDICINA I PARODONTOLOGIJA** 5. **PREVENTIVNA STOMATOLOGIJA I PEDODONCIJA** 6. **ORTODONCIJA** 7. **ORALNA HIRURGIJA SA DENTALNOM IMPLANTOLOGIJOM** 8. **MAKSILOFACIJALNA HIRURGIJA** 9. **DENTALNA IMPLANTOLOGIJA** 10. **DENTALNA RADIOLOGIJA**	30	

3.2. Obaveze doktorskih kandidata u drugoj godini

1. Prijava teme doktorske disertacije (projekat) i javna rasprava.
2. Izvannastavni znanstveni rad iz oblasti doktorske disertacije (najmanje 30) 3.
   Rad na pripremi i odbrani doktorske disertacije:
   Priprema i pisanje projekta doktorske disertacije (15 ECTS)
   Praktičan rad na materijalu doktorske disertacije (15 ECTS)

GODINA STUDIJA	PLAN	ECTS	UKUPNO
2. GODINA STUDIJA (III I IV SEMESTAR)	1. Kolegiji- granski predmeti **1. MORFOLOGIJA ZUBA SA DENTALNOM ANTROPOLOGIJOM I FORENZIKOM** **2. DENTALNA PATOLOGIJA S ENDODONCIJOM** **3. STOMATOLOŠKA PROTETIKA SA DENTALNOM IMPLANTOLOGIJOM** **4. ORALNA MEDICINA I PARODONTOLOGIJA** **5. PREVENTIVNA STOMATOLOGIJA I PEDODONCIJA** **6. ORTODONCIJA** **7. ORALNA HIRURGIJA SA DENTALNOM IMPLANTOLOGIJOM** **8. MAKSILOFACIJALNA HIRURGIJA** **9. DENTALNA IMPLANTOLOGIJA** **10. DENTALNA RADIOLOGIJA**	30	60
	2. Naučno-istraţivački rad	10	
	3. Rad na izradi doktorske disertacije	20	

3.3. Obaveze doktorskih kandidata u trećoj godini

1. Izvannastavni znanstveni rad iz oblasti doktorske disertacije (najmanje 15)
2. Rad na pripremi i odbrani doktorske disertacije:
Praktičan rad na materijalu doktorske disertacije (15 ECTS)
Pisanje finalne verzije doktorske disertacije (30 ECTS)

3. Prijava na ocjenu i ocjena gotovog doktorskog rada.

GODINA STUDIJA	PLAN	ECTS	UKUPNO
3. GODINA (V I VI SEMESTAR)	1. Naučno-istraživački rad	30	60
	2. Pisanje finalne verzije doktorske disertacije	30	

4. NASTAVNI PLAN DOKTORALNOG STUDIJA

I SEMESTAR

Naziv predmeta	Nastava				ECTS
	Predavanja	Seminari	VjeŽbe	Ukupno	
METODOLOGIJA NAUČNO-ISTRAŢIVAČKOG RADA	36	3	6	45	7,5
EPIDEMIOLOŠKE METODE I BIOSTATISTIKA U STOMATOLOSKOJ NAUCI I PRAKSI	30	5	25	60	11
BIOLOŠKE OSNOVE OROFACIJALNOG SISTEMA	36	3	6	45	7,5

PUBLIKOVANJE U BIOMEDICINSKIM NAUKAMA	24	6	0	30	4
Ukupno	**126**	**17**	**37**	**180**	**30**

II SEMESTAR

Naziv predmeta	Nastava				ECTS
	Predavanja	Seminari	VoĎeni praktikumi	Ukupno	
MORFOLOGIJA ZUBA SA DENTALNOM ANTROPOLOGIJOM I FORENZIKOM	16	2	12	30	6
DENTALNA PATOLOGIJA S ENDODONCIJOM	20	3	17	40	8
STOMATOLOŠKA PROTETIKA SA DENTALNOM IMPLANTOLOGIJOM	20	3	17	40	8
ORALNA MEDICINA I PARODONTOLOGIJA	20	3	17	40	8
PREVENTIVNA STOMATOLOGIJA I PEDODONCIJA	20	3	17	40	8
ORTODONCIJA	20	3	17	40	8
ORALNA HIRURGIJA SA DENTALNOM IMPLANTOLOGIJOM	20	3	17	40	8
MAKSILOFACIJALNA HIRURGIJA	20	3	17	40	8
DENTALNA IMPLANTOLOGIJA	16	2	12	30	6
DENTALNA RADIOLOGIJA	16	2	12	30	6

Code:	Naziv predmeta: **METODOLOGIJA NAUČNOISTRAŽIVAČKOG RADA**		
Nivo: postdiplomski	Godina: I	Semestar: I	ECTS kredita: 7,5
Status: obavezni	Predavanja: 36	Vježbe: 6	Seminari: 3
Odgovorni nastavnik			

CILJEVI PREDMETA

Osposobiti studente da samostalno mogu:

- Adekvatno pretraživati literaturu, znanstvene publikacije, baze podataka te da kritički procjene područja istraživanja
- Odabrati adekvatan tip istraživanja ovisno o problematici koju žele istraživati
- Pravilno napisati naučno –istraţivački rad

SVRHA PREDMETA

Pruţiti studentima temeljna i nova saznanja iz područja nauke te temeljna saznanja o tome kako i zašto i kojom metodom ispitati neki problem.

Naučiti studente da kritički uporede svoje rezultate sa istim ili suprotnim rezultatima naučnih istraţivanja.

ISHODI UČENJA

Student će biti osposobljen da:

- Adekvatno pretraţivanje literature, baza podataka
- Napravi sintezu i analiza dosadašnjih istraţivanja iz odreĎenog polja istraţivanja
- Tumači rezultate meta-analiza i rivju radova
- Etički pristupi izradi naučnog rada
- Upozna se sa posljedicama plagijarizma

METODE UČENJA

Predavanja, seminari, pisanje projekta naučnog rada

METODE PROCJENE ZNANJA

- Redovno prisustvo i aktivnosti na predavanjima čine 35% ocjene;

- ✦ Redovno prisustvo i aktivnosti na praktičnoj nastavi čine 15% ocjene; ✦ Seminari čine 10% ocjene;
- ✦ Završni ispit čini 40% ocjene.

- ✦ Po okončanju modula doktorant moţe imati maksimalno 100 bodova, a skala ocjena je sljedeća:
  <55 bodova - ocjena 5
  55-64 boda - ocjena 6
  65-74 boda - ocjena 7
  75-84 boda - ocjena 8
  85-94 boda - ocjena 9
  95-100 bodova - ocjena 10

LITERATURA

1. Phillips EM, Pugh D. How to get an PhD: a handbook for students and supervisors. 4th edt. Open University Press McGraw Hill, England, 2006
2. Marušić M. Uvod u znanstveni rad u medicini (3.obnovljeno i dopunjeno izdanje). Zagreb, Medicinska naklada, 2004
3. American Medical Association. Manual of Style (10th Edition): A Guide for Authors and Editors. Oxford University Press, 2007.

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Uvod u metodologiju naučnoistraživačkog rada	3
2.	Karakteristike istraživanja i zašto istraţivati.	3
3.	Osnovni tipovi istraţivanja (obzervaciona istraživanja)	3
4.	Osnovni tipovi istraživanja (eksperimentalna istraživanja)	3
5.	Meta-analize kao oblik istraživanja	3

6.	RCT- randomizirane studije dobre i loše strane	3
7.	Cost-effectivnes i cost benefit analize	2
8.	Etički aspekti metodologije naučnih istraživanja	3
9.	Plagijarizam – značaj i kako se definira	3
10.	Plagijarizam – načini provjere	2
11.	IMRAD princip – struktura naučnog rada	3
12.	Prijedlog istraživačkog projekta	3
13.	Međunarodni i domaći istraživački projekti, istraživačke mreže	2

PRAKTIČNA NASTAVA

REDNI BROJ	**SADRŽAJ VJEŽBE**	**BROJ SATI**
1.	Određivanje tipa istraživanja pregledom literature	2
2.	Određivanje tipa istraživanja pregledom literature	2
3.	Softverska provjera plagijarizma	2

Seminar 1	Priprema naučnog rad/saopštenja i objava na kongresu ili časopisu
Seminar 2	Priprema naučnog rad/saopštenja i objava na kongresu ili časopisu
Seminar 3	Priprema naučnog rad/saopštenja i objava na kongresu ili časopisu

Code:	Naziv predmeta: **EPIDEMIOLOŠKE METODE I BOISTATISTIKA U STOMATOLOŠKOJ NAUCI I PRAKSI**		
Nivo: postdiplomski	Godina: I	Semestar: I	ECTS kredita: 11
Status: obavezni	Predavanja: 30	Vježbe: 25	Seminari: 5
Odgovorni nastavnik			

OKVIRNI SADRŽAJ PREDMETA

Sadrţaj nastave obuhvata sljedeće teme:

1. Metode prikupljanja podataka u stomatološkim istraţivanjima sa osnovama deskriptivne biostatistike
2. Uspostavljanje ciljeva, i hipoteza u stomatološkim kvantitativnim istraţivanjima sa vrstama distribucije podataka
3. Mjerenje učestalosti bolesti i asocijacija; Greške uzorkovanja u analitičkim studijama (bias i confounding)
4. Univarijatna analiza podataka
5. Bivarijantne analize podataka – dizajn,primjena i analiza epidemioloških metode na stomatološkim primjerima iz stomatološke prakse; Dizajniranje i analiza *screening-a* u stomatologiji.
6. Inferencijalna biostatistika (statističko zaključivanje na primjerima stomatoloških istraţivanja), Regresiona analiza

OPĆE I SPECIFIČNE KOMPETENCIJE

Nakon završene nastave student će unaprijediti stavove o:

- prikupljanju i organizaciji podataka, dizajniranju i analizi epidemioloških studija u stomatologiji, te kontinuiranim, binarnim i polihotomnim podacima posebno na primjerima iz stomatološke nauke i prakse, i različitim tipovima varijabli (kontinurane i kategorične),
- adekvatnim statističkim software-ima u izradi grafičkih modela, i svim drugim vrstama statističkih analiza,
- uni- i bivarijantnim analizama podataka,
- specifičnosti i primjeni i metodama (bio)statističkog zaključivanja.

LITERATURA

Obavezna

1. S. Čavaljuga, M. Čavaljuga. Biostatistika: Osnovni principi i metode. Medicinski fakultet Univerziteta u Sarajevu, 2009.
2. S. Čavaljuga i saradnici. Deskriptivna biostatistika - Teoretske osnove sa primjerima. MF UnSa 2011.
3. D. Essex-Sorlie: Medical Biostatistics and Epidemiology. Appleton & Lange 1995.

Dopunska

1. L. Gordis. Epidemiology. Elsevier. (Bilo koje izdanje: Prvo, drugo, treće ili četvrto)
2. C. H. Hennekens, J. E. Burring, S. L. Mayrent (Ed). Epidemiology in Medicine. Little, Brown and Co Boston/Toronto. 1987.
3. H. Harris and G. Taylor. Medical Statistics Made Easy. Taylor & Fransis 2004.
4. B.R. Kirkwood and J.A.C. Sterne. Essentials of Medical Statistics. Blackwell Science Ltd 2003.
5. B. Dawson and R.G. Trapp. Basic & Clinical Biostatistics. McGraw-Hill 2004.

NAČIN POLAGANJA ZAVRŠNOG ISPITA

Provjera znanja studenata se sastoji od:

- Aktivnost na nastavi (10%)
- samostalnog seminarskog rada uradjenog u vidu projekata uz konsultacije sa predmetnim nastavnikom i asistentima (50%),
- pismenog završnog ispita se organizuje po metodi 2/3 MCQ i 1/3 pitanja esejom (40%).

IZVOĐENJE NASTAVE

- sva nastava se izvodi interaktivno
- predavanja su po metodi „sendviča“: teoretske osnove sa primjerima iz prakse
- vježbe su u malim grupama, sa razradom primjera iz prakse i uz odgovarajuće epidemiološke i statističke programe
- maksimalna grupa na vjętbama je 8 studenata (ako ih je više, biće podijeljeni u dvije grupe) radi kvalitetnog usvajanja gradiva

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Metode prikupljanja podataka u stomatološkim istraţivanjima sa osnovama deskriptivne biostatistike	4
2.	Uspostavljanje ciljeva, i hipoteza u stomatološkim kvantitativnim istraţivanjima sa vrstama distribucije podataka	2
3.	Mjerenje učestalosti bolesti i asocijacija; Greške uzorkovanja u analitičkim studijama (bias i confounding)	4
4.	Univarijatna analiza podataka	4
5.	Bivarijantne analize podataka – dizajn, primjena i analiza epidemioloških metoda na stomatološkim primjerima iz stomatološke prakse; Dizajniranje i analiza *screening-a* u stomatologiji.	8
6.	Inferencijalna biostatistika (statističko zaključivanje na primjerima stomatoloških istraţivanja; regresiona analiza)	6

PRAKTIČNA NASTAVA

REDNI BROJ	SADRŽAJ VJEŽBE	BROJ SATI
1.	- Praktični primjeri metoda prikupljanja podataka u stomatološkoj praksi sa dizajniranjem upitnika na primjerima stomatoloških istraţivanja. - Razrada metoda uzorkovanja (uzorci iste i različite vjerovatnoće), odreĎivanje adekvatne veličine uzorka na primjerima iz stomatološke prakse.	6

	- Definisanje varijabli, grupisanje i sreĎivanje podataka sa principima odekvatnog grafičkog predstavljanja podataka. -	
	Izračunavanje srednjih vrijednosti i mjera varijabiliteta na primjerima podataka prikupljenih iz stomatološke prakse.	
2.	- Razrada oblika distribucija podataka – primjeri normalne distribucije, t-distribucije u kvantitativnim stomatološkim istraţivanjima. Definisanje ciljeva i hipoteza, jednostrano i dvostrano testiranje sa razradom na praktičnim primjerima iz stomatološke prakse.	2
3.	- Primjeri izračunavanja mjera učestalosti bolesti sa razradom mjera asocijacija na primjerima iz stomatološkoj prakse I uz pomoć odgovarajućih software-a.	3
4.	- Univarijantna analiza prikupljenih podataka u stomatološkim istraţivanjima sa primjenom odgovarajućeg statističkog softvera.	2
5.	- Dizajniranje i analiza deskriptivnih epidemioloških studija – primjeri dizajna studija slučaja-slučajeva (*case study/case series*), presječnih (cross-sectional) u stomatološkim istraţivanjima. - Razrada dizajna analitičkih epidemioloških studija (*casecontrol i* kohortne studije), sa izračunavanjem odgovarajućih	6
	mjera asocijacije. Bias i *confounding* (zbunjujući faktor) sa metodama stratifikacije na primjerima istraţivanja u stomatologiji. - Praktična razrada izračunavanja parametara pouzdanosti dijagnostičkih testova skrininga na primjerima iz stomatološke prakse.	

6.	- Bazični koncepti teorije vjerovatnoće sa razradom na primjerima iz stomatološke prakse. - Razrada postavljanja statističkih hipoteza istraţivanja sa odreĎivanjem nivoa statističkog zaključivanja na primjerima iz stomatološke prakse. - Odabir adekvatnog statističkog testa i specificiranje njegovog teorijskog rasporeda vjerovatnoće na primjerima podataka prikupljenih u stomatološkim istraţivanjima. - Primjeri parametrijskih i neparametrijskih testova sa razradom na primjerima iz stomatološke prakse i izradom na odgovarajućem statističkom softveru. - Razrada regresione analize na primjerima iz stomatološke prakse.	6

Seminar 1	Kako odabrati epidemiološku studiju/dizajn istraţivanja
Seminar 2	Uticaj biasa, konfaundinga i interakcija na donošenje zaključaka o uzročnosti
Seminar 3	Od asocijacija do uzročnosti: zaključivanja epidemioloških studija
Seminar 4	Savremeni načini predstavljanja rezultata biomedicinskih/stomatoloških istraţivanja
Seminar 5	Kada i zašto primjenjujemo logističku regresiju?

Code:	Naziv predmeta: **BIOLOŠKE OSNOVE OROFACIJALNOG SISTEMA**		
Nivo: postdiplomski	Godina: I	Semestar: I	ECTS kredita: 7,5
Status: obavezni	Predavanja: 36	Vježbe: 6	Seminari: 3
Odgovorni nastavnik			

CILJEVI PREDMETA

Sticanje naprednih znanja iz oblasti biologije orofacijalnog sistema.

Razumijevanje genetskih osnova, normalnog rasta i razvoja, te odstupanja u području stomatognatog sistema

ISHODI UČENJA

Osposobljavanje doktoranta za samostalno promišljanje i pronalaţenje izvora za istraţivanja iz oblasti orofacijalne genetike, razvoja, histologije, anatomije i fiziologije stomatognatog sistema.

Kompletnije razumijevanje mehanizama odrţavanja integriteta orofacijalnih tkiva, kao i procesa reparacije i regeneracije.

METODE UČENJA

- ✦ Predavanja ✦ Praktične vježbe
- ✦ Seminari
- ✦ Konsultacije

METODE PROCJENE ZNANJA

- ✦ Redovno prisustvo i aktivnosti na predavanjima čine 35% ocjene;
- ✦ Redovno prisustvo i aktivnosti na praktičnoj nastavi čine 15% ocjene; ✦ Seminari čine 10% ocjene;
- ✦ Završni ispit čini 40% ocjene.

- ✦ Po okončanju modula doktorant moţe imati maksimalno 100 bodova, a skala ocjena je sljedeća:
  <55 bodova - ocjena 5
  55-64 boda - ocjena 6
  65-74 boda - ocjena 7
  75-84 boda - ocjena 8
  85-94 boda - ocjena 9
  95-100 bodova - ocjena 10

LITERATURA

1. Avery JK, Chiego DJ. Osnovi oralne histologije i embriologije, DataStatus, Beograd 2011.
2. Berkovitz BKB, Holland GR, Moxham BJ. Oral anatomy, histology and embriology, Mosby, St Louis, 2002.
3. Garant PR. Oral Cells and Tissues. Qintessence Publishing, 2003.
4. Roberson TM, Heymann HO, Swift EJ, editors. Sturdevant's Art and Science of Operative Dentistry, Mosby, St. Louis, 2002.

5. Bergenholtz G, Horsted-Bindslev P, Reit C. Endodontologija. Orion art, Beograd, 2011
6. Mjör I. Biologija pulpe i dentina u restaurativnoj stomatologiji, Data Status, Beograd, 2008
7. Škrinjarić I. Orofacijalna genetika. Školska knjiga, Zagreb, 2006.
8. Mastham MKM. Textbook of Human Oral Embriology, Anatomy, Physiology, Histology and Tooth Morphology. JP Medical Ltd, 2010.

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Biomehanika tvrdih zubnih tkiva.	2
2.	Biološki potencijal caklinske remineralizacije.	1
3.	Biološke osnove hemodinamskih procesa u pulpi.	2
4.	Epitelijalno-ektomezenhimalna morfogenetska regulacija odontogeneze	2
5.	Porijeklo, lokalizacija, funkcija i potencijalna uloga nediferenciranih mezenhimalnih celula zubnog organa u reparativnoj stomatologiji	2
6	Komparativna biologija i reparativni potencijal zubnih tkiva	2
7.	Konzervativni i holistički koncept mineralnog disbalansa tvrdih zubnih tkiva	1
8.	Oralni somatosenzorni sistemi	2
9.	Histološke specifičnosti i optičke karakteristike zdravih i patološki promjenjenih zubnih tkiva	1

10.	Biološki aspekti starenja oralnih i zubnih tkiva	2
11.	Makroskopske i mikroskopske, karakteristike parodontalnih tkiva i različitih tipova oralnih sluznica	2
12.	Specifični i nespecifični mehanizmi odbrane u usnoj šupljini (molekularni aspekt)	1
13.	Genetski faktori rizika u parodontologiji	1
14.	Temporomandibularni zglob graĎa, uloga i funkcija i temporomandibularne disfunkcije (definicija, etiologija, znakovi i simptomi te terapija)	2
15.	Referentni poloţaji donje vilice i Osnovne kretnje	2
16.	Okluzija i artikulacija	2
17.	Genetska istraživanja u stomatologiji - studije na blizancima - studije familija - studije u populaciji	4
18.	Karakteristike dento-oralnih tkiva i specifičnosti pupo-parodontalnog kompleksa u dječijem uzrastu.	2
19.	Mentalni i tjelesni razvoj djeteta - implikacije za oralno zdravlje i stomatološki tretman.	1
20.	Mehanizmi i teorije erupcije i smjene zuba.	2

PRAKTIČNA NASTAVA

REDNI BROJ	SADRŽAJ VJEŽBE	BROJ SATI
1.	Analiza, prikupljanje i evaluacija naučnih podataka u prospektivnim i retrospektivnim istraţivanjima u rehabilitaciji orofacijalnog sistema	1
2.	Mikroskopska analiza razvojnih i regresivnih promjena zubnih tkiva	1
3.	Odstupanja od normalnog razvoja organuma dentale	1
4.	MKE u istraţivanjima biomehanike zubnih tkiva	1
5.	Patohistološke promjene na oralnim sluznicama i parodonciju	1
6.	Genetski aspekt karakteristika orofacijalnog sistema	1

Seminar 1	Pretraživanje i analiza recentne literature po ključnim riječima
Seminar 2	Temeljna znanja orofacijalne biologije u kontekstu naučno-istraţivačkog rada
Seminar 3	Uticaj sistemskih bolesti na biologiju orofacijalne regije

Code:	Naziv predmeta: **PUBLIKOVANJE U BIOMEDICINSKIM NAUKAMA**		
Nivo: postdiplomski	Godina: I	Semestar: I	ECTS kredita: 4
Status: obavezni	Predavanja: 24	Vježbe: 0	Seminari: 6
Odgovorni nastavnik			

CILJEVI PREDMETA

Upoznati studenta s osnovnim principima naučne komunikacije i potrebom publikovanja rezultata naučnog istraţivanja. Osposobiti studenta za samostalno objavljivanje rezultata

rada u različitim vrstama publikacija. Sticanje neophodnih znanja i vještina za samostalno pisanje i prezentiranje rezultata istraţivanja. Upoznati studente sa osnovama javne prezentacije rada na stručnim i naučnim skupovima. Osposobiti studenta za kritičko promišljanje i analizu naučno-istraţivačkih radova. Upoznati studente s principima publikovanja, recenziranja i ureĎivanja časopisa u stomatologiji, sa posebnim naglaskom na etičke principe objavljivanja.

ISHODI UČENJA

Nakon odslušane nastave student će biti osposobljen samostalno objaviti rezultate naučnoistraţivačkog rada u različitim vrstama publikacija, bit će upoznat s procesom objavljivanja naučno-istraţivačkog rada u stomatologiji, bit će upoznat s elementima javne prezentacije radova na stručnim i naučnim skupovima, biti osposobljen na samostalno čitanje, pisanje i kritičko promišljanje naučno-istraţivačkog rada.

METODE UČENJA

- Predavanja
- Seminari
- Konsultacije

METODE PROCJENE ZNANJA

Redovno prisustvo i aktivnosti na predavanjima čine 25% ocjene; seminari čine 25% ocjene; završni ispit čini 50% ocjene. Po okončanju modula doktorant moţe imati maksimalno 100 bodova. Za poloţeni završni ispit student treba da ima najmanje 55% postignutih bodova u toku semestra na osnovu prisustva i aktivnosti na nastavi i seminarskog rada. Skala ocjena je sljedeća:

<55 bodova - ocjena 5
55-64 boda - ocjena 6
65-74 boda - ocjena 7
75-84 boda - ocjena 8
85-94 boda - ocjena 9
95-100 bodova - ocjena 10

LITERATURA

1. Jokić M. Bibliometrijski aspekti vrednovanja znanstvenog rada.Sveučilišna knjiţara, Zagreb 2005.
2. V Silobrčić. Kako sastaviti, ocijeniti i objaviti znanstveno djelo? 6 dopunjeno izdanje, 2003
3. J. Peat, E. Elliott, L. Baur, V. Keena. Scientific Writing. London: BMJ Books, 2002.
4. T. Greenhalgh. How to Read a Paper. London: BMJ Books, 2001.
5. GM Hall. How to Write a Paper. London: BMJ Books, 1998.

6. GM Hall. How to Present at meetings. London: BMJ Books, 2001.
7. JĐ Savić. Kako napisati, objaviti i vrednovati naučno delo u biomedicini. Beograd: Kultura, 1996.
8. RA Day. How to Write and Publish a Scientific Papaer. Phoenix: Oryx, 1998.
9. JĐ Savić. Kako stvoriti naučno delo u biomedicini. Beograd: Kultura, 1999.
10. Todorović Lj. Vučković- Dekić Lj.(urednici). Komunikacija u biomedicinskim naukama. Medicinski fakultet Univerziteta u Kragujevcu, M-print Beograd, Kragujevac 2008.

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Oblikovanje naučnog rada. Struktura naučnog članka, vaţnost pojedinih dijelova rada.	2
2.	Citiranje literature u naučnom radu. Citati i citatne analize. Jednoobrazni zahtjevi za podnošenje rukopisa naučnim časopisima (Vankuverska pravila).	1
3.	Vrste naučnih publikacija.	1
4.	Autori i autorstvo. Naučna saradnja (koautorstvo). Autorska prava i njihova zaštita. Naučna istina i inteletualno poštenje u naučno-istraţivačkom radu. Profesionalizam. Odgovornost istraţivača	2
5.	Javna prezentacija i odbrana naučnog rada. Usmena prezentacija rada. Poster prezentacija	2
6.	Časopisi. Fizički oblik časopisa- broj članaka i broj stranica. Izdavači časopisa. Jezik članaka u časopisu. Vrste članaka. Vaţnost uputa za autore.	1
7.	Journal Citation Report (JCR). Faktor odjeka.	1

8.	Bibliografske baze podataka. ISI-jeve bibliografske baze podataka: Citatni indeksi SCI, SSCI, Current Contents i ISI Proceedings. Sekundarni izvori informacija.	1
9.	Intelektualno nepoštenje u nauci. Plagijarizam	1
10.	Proces publiciranja. Etika publiciranja. Izdavači časopisa. Uloga urednika i uredničkog odbora časopisa.	1
11.	Prikaz slučaja – značaj pravilne koncepcije naslova i pisanje uvoda iz domena oralne medicine i parodontologije	1
12.	Prikaz slučaja- pisanje prezentacije kliničkog slučaja sa relevantnim nalazima (mikrobiološki, PH nalaz, laboratorijska dijagnostika) iz domena oralne medicine i parodontologije	1
13.	Prikaz slučaja – forma naučno-stručnog rada	1
14.	Pisanje i publikovanje rada iz oblasti stomatološke protetike sa dentalnom implantologijom	1
15.	Priprema projekta naučnog rada s ciljem dobivanja odobrenja za naučno istraţivanje	1
16.	Pravilno prikupljanje podataka naučnog istraţivanja i pisanje naučnog rada	1
17.	Publikovanje naučnog rada	1
18.	Pregledni rad, sistematski pregled literature i meta analiza	1
19.	Izlaganje na naučnom skupu, osnovne vrste izlaganja, razlike izmeĎu pojedinih vrsta izlaganja, karakteristike uspješne prezentacije.	1

20.	Pretraţivanje naučne literature, principi vrjednovanja publikacija, izbor literature za citiranje, izbor časopisa za objavljivanje.	1
21.	Stil pisanja naučnog rada i specifičnost izraţavanja, najčešće greške u pisanju rada za publikovanje.	1

Code:	Naziv predmeta: **MORFOLOGIJA ZUBA S DENTALNOM ANTROPOLOGIJOM I FORENZIKOM**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 6
Status: kolegij	Predavanja: 16	Vđeni praktikumi: 12	Seminari: 2
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Izazovi i mogućnosti antropoloških i forenzičkih istraţivanja u stomatologiji	1
2.	Povezanost oblika i funkcije orofacijalnih struktura	1
3.	Antropološki aspekt proučavanja morfologije, dimenzija i varijacija zuba	1
4.	Funkcionalna morfologija okluzalnog reljefa (potporne kvrţice i kvrţice vodilje, marginalni grebeni, tip fisura V, U, I, IK, Y)	1
5.	Topografska anatomija endodontskog prostora	1
6.	Ostali aspekti funkcionalne anatomije zuba	1

7.	Komparativna mikroanatomija zubnih tkiva	1
8.	Optička svojstva tvrdih zubnih tkiva	1
9.	Regresivne promjene zubnih tkiva (klinički i forenzički aspekti)	1
10.	Nekarijesne lezije tvrdih zubnih tkiva. Savremeni koncept i nove tehnologije u dijagnozi i terapiji	1
11.	Klasifikacija morfoloških karakteristika na zubima stalne denticije - ASUDAS standard	1
12.	Odontometrija: Aplikativnost rezultata dobijenih odontometrijskim metodama	1
13.	Klasične morfometrijske metode i geometrijska morfometrija u stomatologiji	1
14.	Trodimenzionalna fotogrametrija u forenzičnoj stomatologiji	1
15.	Forenzične i bioarheološke karakteristike zuba (dob, spol, rasa i individualne karakteristike)	1
16.	Dentalno profiliranje i komparativna odontografija	1

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Kraniofacijalna antropometrija (antropometrijske tačke, antropometrijski indeksi)	1
2.	Sakupljanje, interpretacija i primjena antrpometrijskih mjerenja u populacijskim, kliničkim i forenzičkim istraţivanjima)	1
3.	Fotogrametrija u stomatologiji (tehnike, standardizacija fotografija, vrste fotografija)	1

4.	Subjektivni i objektivni kriteriji estetske procjene dentofacijalnog kompleksa (analiza dentodentalnog, dentogingivalnog, dentolabijalnog i dentofacijalnog kompleksa na fotografijama)	1
5.	Odontometrija (metode na prirodnim zubima, modelima, fotografijama, pomoću mikroskopa i radiografski)	1
6.	Kalibracija istraţivača i ujednačavanje kriterija mjerenja	1
7.	Analiza morfoloških karakteristika zuba po ASUDAS standardu	1
8.	Anomalije zuba (etiologija, klasifikacija i dijagnostika)	1
9.	Antropološke analize primjenom radiografije	1
10.	Forenzične analize primjenom radiografije	1
11.	Kompjuterske morfometrijske analize	1
12.	Komparativna odontografija	1

Code:	Naziv predmeta: **DENTALNA PATOLOGIJA S ENDODONCIJOM**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Nekarijesna oštećenja tvrdih zubnih tkiva	2
2.	Kompozitni materijali	2
3.	Minimalno-invazivna terapija tvrdih zubnih tkiva	2
4.	Mogućnosti estetkog zbrinjavanja u restaurativnoj stomatlogiji- izbjeljivanje zuba	2
5.	Interne i eksterne resorpcije korijena zuba	2
6.	Ultrazvuk u endodonciji	2
7.	Metode mašinske obrade korijenskih kanala zuba	2
8.	Kliničke i radiološke smjernice u interpretaciji endodontskog prostora	2
9.	Imunološki aspekt pulpno-periapikalnih promjena	2
10.	Biokompatibilnost endodontskih materijala	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	

1.	Značaj i upotreba apex-lokatora u određivanju radne duţine korijenskih kanala.	2
2.	Tehnike obrade korijenskih kanala.	2
3.	Obturacione tehnike korijenskih kanala (standardne i savremene).	2
4.	Estetske kompozitne resauracije (minimalno invazivne tehnike)	2
5.	Indikacije i princip rada revizije neadekvatno punjenih korijenskih kanala.	2
6.	Endodontsko-parodontalni problemi i mogućnosti terapije.	2
7.	Restauracija endodontski tretiranog zuba.	2
8.	Specifičnosti terapije karijesa i endodontske terapije kod pacijenata treće ţivotne dobi.	2
9.	Analgezija u endodonciji.	1

Code:	Naziv predmeta: **STOMATOLOŠKA PROTETIKA S DENTALNOM IMPLANTOLOGIJOM**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Područje istraţivanja fiksne protetike. Indikacije, vrste radova (krunice, mostovi, kočić nadogradnje, ljuspice), kontraindikacije, funkcija, fonacija, estetika, socijalno – psihološki aspekt fiksno protetske terapije.	1
2.	Istraţivanja u okviru fiksnih protetskih radova. Istraţivanja na krunicama (parametri – karijes, retrakcija, stanje parodonta – indeksi), istraţivanja na kočić nadogradnjama (RTG), istraţivanja na zubnim mostovima, istraţivanja na mekim tkivima.	1
3.	Realnost zatečenih stanja u ustima pacijenata u okviru fiksno protetske terapije. Biološki procesi – promjene na zubu nosaču, promjene na gingivi, promjene na potpornom aparatu i promjene na alveolarnoj kosti.	1
4.	Navike pacijenata – dobra navika i loš rad. Mogućnosti (stručne i tehnološke – mašine i materijali)	1
5.	Ispitivanje fizikalnih osobina dentalnih gipseva - eksperimentalno laboratorijska studija– dio 1. Postavljanje problema, hipoteza i ciljeva istraţivanja. Fizikalne osobine materijala (dimenzionalna stabilnost, reprodukcija detalja i kompresivna otpornost). Primjena ISO standarda u istraživanju. Planiranje eksperimentalno laboratorijskog istraživanja.	1
6.	Ispitivanje fizikalnih osobina dentalnih gipseva - eksperimentalno laboratorijska studija– dio 2. Priprema laboratorijskog protokola. Izvođenje eksperimentalno laboratorijskog istraţivanja. Analiza rezultata istraživanja. Izvođenje zaključaka.	1

7.	Značaj procjene gustine kosti u fiksno protetskoj terapiji. Uticaj lokalnih i sistemskih faktora na gustinu alveolarne kosti, metode za odreĎivanje gustine kosti sa posebnim osvrtom na kompjuteriziranu denzitometriju.	1
8.	Klinička evaluacija fiksno protetskih radova Uticaj fiksnih protetskih radova na parodontalno zdravlje, ispitivanje parodontoloških indeksa i analiza RTG snimaka kod fiksno protetske terapije.	1
9.	Eksperimentalno laboratorijska istraţivanja cemenata za definitivno cementiranje u fiksnoj protetici. Dentalni cementi na bazi polimera. Kiselinsko- bazni cementi	1
10.	Biomehanika u fiksnoj protetici. Biomehanika zuba nosača. Ţvačne sile kao vaţan faktor u biomehaničkim zbivanjima.	1
11.	Biomorfološke metode istraţivanja u stomatološkoj protetici. Morfometrijska 3D analiza kraniofacijalnog sistema. Lubanja kao antropomorfni model. Koordinate antropomorfnog modela i pozicioniranje u Euklidovom prostoru	3
12.	Okluzija i artikulacija: maksimalna interkuspidacija, centralna relacija, odnosi vilica, patološke promjene	1
13.	Temporomandibularni zglob: funkcionalna anatomija svih dijelova, kretnje mandibule, kretnje u zglobu, fiziologija ţvakanja, rendgen temporomandibularnog zgloba (sa i bez disfunkcija)	2
14.	Znanstveni pristup patofiziologiji, dijagnostici i liječenju bolova u području glave i vrata. Neurološki uzroci poremećaja ţvakanja i gutanja	2
15.	Stomatognati sistem (SGS): anatomija i fiziologija svih dijelova (sa posebnim osvrtom na muskulaturu)	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Procjena gustine kosti korištenjem kompjuterizirane denzitometrije	1
2.	Ispitivanje parodontalnog zdravlja kod fiksno protetskih radova – značajni parodontološki indeksi	1
3.	Istraţivanja fizičkih i hemijskih osobina cemenata prema ISO standardima	1
4.	Laboratorijska ispitivanja mehaničkih osobina materijala primjenom testne kidalice	1
5.	Planiranje eksperimentalno laboratorijskog istraţivanja	1
6.	Priprema laboratorijskog protokola	1
7.	Konzilijarni razgovori o predavanoj temi: Područje istraţivanja fiksne protetike. Indikacije, vrste radova (krunice, mostovi, kočić nadogradnje, ljuspice), kontraindikacije, funkcija, fonacija, estetika, socijalno – psihološki aspekt fiksno protetske terapije.	1
8.	Konzilijarni razgovori o predavanoj temi: Istraţivanja u okviru fiksnih protetskih radova. Istraţivanja na krunicama (parametri – karijes, retrakcija, stanje parodonta – indeksi), istraţivanja na kočić nadogradnjama (RTG), istraţivanja na zubnim mostovima, istraţivanja na mekim tkivima.	1
9.	Konzilijarni razgovori o predavanoj temi: Realnost zatečenih stanja u ustima pacijenata u okviru fiksno-protetske terapije. Biološki procesi – promjene na zubu nosaču, promjene na gingivi, promjene na potpornom aparatu i promjene na alveolarnoj kosti.	1

10.	Konzilijarni razgovori o predavanoj temi: Navike pacijenata – dobra navika i loš rad. Mogućnosti (stručne i tehnološke – mašine i materijali)	1
11.	Analiza lubanje i iznalaţenje antropomorfnih tačaka	1
12.	3D CT CB aparat. Artikulatori.	1
13.	Model; odnosi vilica i analiza na modelima i pacijentu.	1
14.	Analiza na pacijentu i analiza rendgen snimaka temporomandibularnog zgloba	1
15.	Prikaz pacijenata sa bolovima koji su uzrokovani temporomandibularnim disfunkcijama	1
16.	Prikaz pacijenata koji imaju neurološke poremećaje druge etiologije; diferencijalno dijagnostički pristup	1
17.	Analiza svih dijelova stomatognatog sistema sa posebnim osvrtom na muskulaturu i disfunkcije	1

Code:	Naziv predmeta: **ORALNA MEDICINA I PARODONTOLOGIJA**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Morfologija i patologija biofilma	2
2.	Imunopatogeneza parodontalne bolesti	2
3.	Oralno patološke promjene gingive i parodonta	2
4.	Klinička i Rtg evaluacija parodontitisa	2
5.	Neinvazivne metode u parodontologiji	2
6.	Značaj kliničkih znakova i simptoma u dijagnozi oralnih oboljenja	2
7.	Uloga pljuvačke u patogenezi oralnih oboljenja	2
8.	Oralne infekcije kod imunodeficijentnih pacijenata	2
9.	Oralne bolesti kao posljedica sistemskih poremećaja	2
10.	Promjena boje oralnih sluznica	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI

1.	Osnovni dijagnostički i terapijski postupci u parodontologiji	2
2.	Molekularno biološki testovi u dijagnostici parodontalnih oboljenja	1
3.	Inicijalna parodontalna terapija sa RTG analizom	2
4.	Farmakološki potpomognuta parodontalna terapija	1
5.	Klinička procjena formiranja epitelnog pripoja nakon obrade tvrdog i mekog tkiva parodontalnog dţepa	1
6.	Analiza RTG snimaka u procjeni rizika od fokalnog oboljenja	1
7.	Diferencijalna dijagnoza patoloških promjena oralnih sluznica	1
8.	Oralni testovi i mikrobiološki nalaz u dijagnostici oralnih bolesti	1
9.	Primjena specifičnih protokola stomatoloških tretmana kod pacijenata sa bolestima pojedinih organskih sistema	1
10.	Klinička evaluacija najčešćih promjena na oralnim sluznicama kod osoba starije ţivotne dobi	1
11.	Značaj analize pljuvačke za ranu detekciju bolesti parodoncija	1
12.	Kvantitativna i kvalitativna analiza pljuvačke kod oralnih oboljenja	1
13.	Diferencijalna dijagnoza svijetlih lezija oralnih sluznica	1
14.	Diferencijalna dijagnoza tamnih lezija oralnih sluznica	1

15.	Diferencijalna dijagnoza volumnog povećanja mekih tkiva	1

Code:	Naziv predmeta: **PREVENTIVNA STOMATOLOGIJA I PEDODONCIJA**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Pisanje doktorskog rada kroz kliničku temu iz oblasti pedodoncije	2
2.	Restaurativni tretman kompozitimaprednosti i mane	2
3.	Metodologija istraţivanja i praćenja oralnog zdravlja	2
4.	Savremene dijagnostičke procedure u detekciji rane kariozne lezije (mogućnosti i ograničenja)	2
5.	Specifičnosti i mogućnosti istraţivanja prema uzrastu unutar dječije populacije	2
6.	Istraţivanje učestalosti i etiologije oboljenja parodonta u dječijem uzrastu. Definisanje rizika i istraţivanje faktora rizika za oboljevanje parodonta u dječijem uzrastu.	2
7.	Evaluacija kliničkih parametara strukturnih promjena na zubima	2

8.	Kliničke posljedice strukturnih anomalija na zubima	2
9.	Mikrobiološki aspekt karijesa u mliječnoj i mladoj trajnoj denticiji	2
10.	Epidemiologija i faktori rizika teške forme karijesa ranog djetinjstva – smjernice za dalja istraţivanja	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Metode procjene stanja oralnog zdravlja u epidemiološkim istraţivanja za dječiju populaciju.	1
2.	Epidemiologija oralnog zdravlja	1
3.	Kalibracija istraţivača u epidemiološkim istraţivanjima za procjenu stanja oralnog zdravlja.	1
4.	Anketa kao metoda naučno-istraţivačkog rada	1
5.	Primjene principa stomatologije zasnovane na dokazima na sopstvenom planiranom naučnom istraţivanju.	1
6.	Analiza metoda za procjenu rizika za nastanak karijesa u dječijem uzrastu.	1
7.	Analiza metoda za procjenu rizika za bolesti parodonta kod djece i adolescenata.	1
8.	Ispitivanje uticaja terapijskih i profilaktičkih sredstava u liječenju početne kariozne lezije.	1
9.	Dizajniranje programa za sprječavanje i suzbijanje oralnih oboljenja predškolske i školske djece, trudnica i dojilja.	1
10.	Metode i sredstva promocije oralnog zdravlja i motivacija struke, društva i pojedinca za očuvanje oralnog zdravlja.	1

11.	Estetski aspekti restauracija trauma zuba kod djece	1
12.	Minimalna invazivna terapija-moderni aspekt rješenja karijesa	1
13.	Fizičko-hemijske osobine restaurativnih materijala- klinički aspekt	1
14.	Analiza učestalosti oralnih manifestacija razvojnih anomalija i sindroma kod djece	1
15.	Analiza kliničkih parametara opaciteta cakline	1
16.	Indeksi za registraciju razvojnih defekata cakline	1
17.	Analiza mikrobioloških istraživanja karijesa	1

Code:	Naziv predmeta: **ORTODONCIJA**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Rast i razvoj dentofacijalnog kompleksa i područja istraţivanja	6
2.	Ortodontske nepravilnost i procjena potrebe za ortodonstkim tretmanom	6

3.	Eksperimentalna istraţivanja u ortodonciji	6
4.	Prezentacija ortodontskih naučnih radova	2

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Proučavanje rasta i razvoja	2
2.	Ortodonskti aspekti mlječne denticije	3
3.	Ortodontski aspekti mješovite denticije	3
4.	Ortodontski aspekti stalne denticije	3
5.	Ortodontski aspketi okluzije odraslih	2
6.	Testiranje adhezivnih materijala, attachmena, mikrobiološke analize	4

Code:	Naziv predmeta: **ORALNA HIRURGIJA SA DENTALNOM IMPLANTOLOGIJOM**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Neadekvatno djelovanje lokalne anestezije u praksi	1
2.	Alternativne tehnike lokalnih anestezija	1
3.	Retrogradno zaptivanje korijenskog kanala kod apikotomije	1
4.	Histološki supstrat cističnih tvorevina u kosti	1
5.	Dijagnostika i diferencijalna dijagnostika cističnih tvorevina.	1
6.	Suvremene mogućnosti dijagnostike patoloških lezija maksilarnog sinusa	1
7.	Hirurško ortodontski tretmani retiniranih i impaktiranih zuba	1
8.	Dijagnostika i planiranje hirurško ortodontskih tretmana retiniranih i impaktiranih zuba	1
9.	Primjena ultrazvučne hirurgije kod hirurških tretmana impaktiranih zuba	1
10.	Avulzije zuba	1
11.	Modaliteti zarastanja avulziranih zuba- klinički i histološki aspekt	1
12.	Eksperimentalni model psa u izučavanju dentoalveolarne traume	1
13.	Prognoze replantiranih zuba i konačni ishodi	1

14.	Dentalna implantologija u estetskoj regiji- specifikumi i izazovi	1
15.	Principi prezervacije alveole nakon ekstrakcije zuba	1
16.	Ugradnja implantata u nepovoljnim uvjetima	1
17.	Stomatološki tretman medicinski kompromitiranih pacijenata	1
18.	Stomatološki tretman onkoloških pacijenata	1
19.	Stomatološki tretman pacijenata sa prenosivim bolestima	1
20.	Suvremene mogućnosti rendgenografske i CT dijagnostike u oralno-hirurškoj praksi	1

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Piezo hirurgija	2
2.	Primjena PRF-a u oralnoj hirurgiji	2
3.	Tehnike ekstrakcije zuba pacijenata planiranih za implantološku terapiju	2
4.	Tehnike intraosealne anestezije	2
5.	Oralno-hirurški zahvati kod medicinski kompromitiranih pacijenata	2
6.	HIV-pacijenti u oralno-hirurškoj praksi	2

7.	Hirurško ortodonski tretmani pacijenata sa retiniranim i impaktiranim zubima	2
8.	Specifičnosti apikotomija zuba nosača fiksnih protetskih radova	2
9.	Savremeni pristup terapiji impaktiranih i retiniranih zubi	1
10.	Komplikacije tokom i nakon hirurške ekstrakcije impaktiranih i retiniranih zubi	2
11.	Protetska rehabilitacija dentalnim implantatima nakon tretmana odontogenih cista i tumora	2
12.	Značaj dentalnog folikula i imunohistohemije u oralnoj hirurgiji	1

Code:	Naziv predmeta: **MAKSILOFACIJALNA HIRURGIJA**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 8
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 17	Seminari: 3
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Infekcija dubokih prostora glave i vrata općenito	2
2.	Specifične upale glave i vrata	2
3.	Infekcije koštanog tkiva viscerokranija	2
4.	Prijelomi koštanih struktura visceralnog kranija i povrede mehkih tkiva	2
5.	Oboljenja kranijalnih nerava	2
6.	Oboljenja temporormandibularnog zgloba	2
7.	Oboljenja pljuvačnih ţlijezda	2
8.	Tumori maksilofacijalne regije	2
9.	Urodjene anomalije mehkih tkiva i koštani deformiteti maksilofacijalne regije	2
10.	Rekonstruktivne procedure u maksilofacijalnoj hirurgiji i estetska hirurgija lica	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Analiza osnovnih dijagnostičkih procedura u hirurgiji glave i vrata MRI i CT, EHO i sl.	2
2.	Klinički pregledi /inspekcija-direktoskopija, indirektoskopija, palpacija, perkusija itd.	1
3.	Formiranje istorije bolesti za hospitalnog pacijenta	2
4.	Manje invazivne dijagnostičke procedure u MFH hirurgiji	1
5.	Manje interventne hirurške procedure u MFH hirurgiji ambulantnog tipa	1
6.	Provođenje u operacionoj sali - videokonferencija	1
7.	Praćenje lokalnog i opšteg statusa u ranom postoperativnom periodu	1
8.	Provođenje u operacionoj sali- videokonferencija	1
9.	Provođenje u operacionoj sali- videokonferencija	1
10.	Provođenje u operacionoj sali- videokonferencija	1
11.	Provođenje u operacionoj sali- videokonferencija	1
12.	Provođenje u operacionoj sali - videokonferencija	1
13.	Provođenje u operacionoj sali - videokonferencija	1

14.	Provođenje u operacionoj sali - videokonferencija	1
15.	Provođenje u operacionoj sali - videokonferencija	1

Code:	Naziv predmeta: **DENTALNA IMPLANTOLOGIJA**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 6
Status: kolegij	Predavanja: 16	Vođeni praktikumi: 12	Seminari: 2
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Bioinžinjering u dentalnoj implantologiji. Objasniti strukturu i svojstva materijala od kojih se izrađuju dentalni implantati i protetske komponente za dentalnu implantologiju	2
2.	Primjena i pravilan odabir radioloških metoda u dentalnoj implantologiji. Prezentirati fundamentalne radiološke metode koje se koriste za dijagnosticiranje i planiranje u dentalnoj implantologiji. Tokom predavanja ce biti u detalje objašnjena upotreba Sidex i Galileos implant planing softvera	4
3.	Planiranje tretmana i operativne procedure u dentalnoj implantologiji. Objasniti osnovne postulate planiranja u dentalnoj implantologiji sa osvrtom na anatomske limite i fiziologiju kosti. Dati "korak po korak" prikaz operativnih procedura u dentalnoj implantologiji	4

4.	Periimplantna histologija. Predavanje će pribliţiti odnos između implantata i okolnog koštanog tkiva i biološke promjene koje nastaju u koštanom tkivu nakon insercije implantata	3
5.	Prikaz slučajeva u dentalnoj implantologiji Kroz prikaz slučajeva će biti prezentiran pravilan odabir pacijenata, planiranje u dentalnoj implantologiji, prikaz najnovijih strateških operativnih procedura ugradnje implantata, preporuke kako bi se umanjile postoperativne komplikacije. Svaki slučaj ce biti detaljno analiziran i diskutovan	4
6.	Stomatološka protetika u dentalnoj implantologiji Tokom predavanja studentima doktorskog studija ce se dati detaljna didaktička i klinička upustva u vezi tehnika i procedura s ciljem uspješne i potpune rehabilitacije pacijenata protetskim suprastrukturama nošenim dentalnim implantatima. Bit ce predstavljene napredne kliničke i laboratorijske procedure sa naglaskom na komponente za restauraciju parcijalno i totalno bezubih pacijenata.	3

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Upoznavanje sa različitim brendovima dentalnih implantata na tržištu, prednosti i nedostaci	1
2.	Selekcija pacijenata za implantaciju	1
3.	Upotreba RTG, RVG snimaka i OPG snimaka u implantologiji, analiza slučajeva	1

4.	Upotreba 3D CTCB aparata u implantologiji te analiza slučajeva uz upotrebu Sidex i Galileos implant planing softvera	1
5.	Planiranje postavke implantata u gornjoj vilici sa osvrtom na anatomske limite i fiziologiju kosti	1
6.	Hirurške procedure sinus lift operacije	1
7.	Planiranje postavljanja implantata u donjoj vilici sa osvrtom na anatomske limite i fiziologiju kosti	1
8.	Prikaz postavljanja implantata u gornjoj vilici područje frontalnih zuba	1
9.	Prikaz postavljanja implantata u gornjoj vilici područje bočne regije	1
10.	Prikaz postavljanja implantata u donjoj vilici područje frontalnih zuba	1
11.	Prikaz postavljanja implantata u donjoj vilici područje bočne regije	1
12.	Prikaz postavljanja gingiva formera nakon otvaranja implantata	1
13.	Odabir suprastruktura za određene slučajeve	1
14.	Prikaz protetskih radova na implantatima – nedostatak jednog zuba	1
15.	Prikaz protetskih radova na implantatima – nedostatak više zuba	1
16.	Prikaz protetskih radova na implantatima – nedostatak svih zuba	1
17.	Prikazi mogućih komplikacija i neuspjeha u dentalnoj implantologiji	1

Code:	Naziv predmeta: **DENTALNA RADIOLOGIJA**		
Nivo: postdiplomski	Godina: I	Semestar: II	ECTS kredita: 6
Status: kolegij	Predavanja: 16	Vođeni praktikumi: 12	Seminari: 2
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Mjesto uloga i značaj radioloških procedura u stomatologiji	2
2.	Imaging metodi u dijagnozi bolesti orofacijalne regije	2
3.	Digitalni ortopantomografski metod	2
4.	Dijagnostikovanje oboljenja TM zgloba – radiografske metode	2
5.	Dijagnostikovanje oboljenja TM zgloba – MR metoda	2
6.	Dijagnostika bolesti velikih pljuvačnih ţlijezda – mogućnosti radiografskih metoda i MR metod	2
7.	Imaging dijagnostika lezija u mekotkivnim strukturama orofacijalne regije	2

8.	Rentdgen slika najčešćih sindroma vezanih za orofacijalnu regiju	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Uloga stomatologa u obavljanju pojedinih radiografskih i dijagnostičkih procedura	2
2.	Tumačenje slike dobijene imaging metodama	1
3.	Definisanje indikacija za obavljanje različitih dijagnostičkih radiografskih procedura	1
4.	Osnovni principi zaštite pacijenta i osoblja u toku izvođenja različitih radiografskih procedura	2
5.	Definisanje i kritički osvrt na indikacije za obavljanje digitalnih ortopantomografskih metoda	1
6.	Principi izvođenja pregleda MR metodom	1
7.	Valorizacija prednosti i nedostataka radiografskih i digitalnih metoda	2
8.	Uporedna analiza rezultata radiografskih i MR procedura u dijagnosticiranju bolesti orofacijalne regije	2

II GODINA

Code:	Naziv predmeta: **MORFOLOGIJA ZUBA SA DENTALNOM ANTROPOLOGIJOM I FORENZIKOM**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: obavezni	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Temeljna morfološko-funkcionalna znanja kao osnova za istraţivački i klinički rad	1
2.	Palatoskopija – metodologija i materijali	1
3.	Cheiloskopija – metodologija i materijali	1
4.	Spolni dimorfizam mliječnih i trajnih zuba – antropološki i forenzički značaj	1
5.	Spolni dimorfizam maksile i mandibule	1
6	Procjena dobi dentalnim metodama kod djece	1
7.	Procjena dobi dentalnim matodama kod odraslih osoba	1
8.	Tribološki koncept trošenja tvrdih zubnih tkiva	1

9.	3D morfologija kvrţično-grebenskog sistema	1
10.	3D morfologija fisurnog sistema	1
11.	3D morfologija korijenskih kanala	1
12.	Paleoodontologija – izazovi i mogućnosti paleoodontoloških isztraţivanja	1
13.	Dentalne matične ćelije i tkivni inženjering orofacijalnih struktura	1
14.	Izvori, izloacija, uzgoj i transfer dentalnih matičnih ćelija	1
15.	Osnovi biotehnološkog koncepta u stomatologiji	1
16.	Ultrastruktura i priroda veze tvrdih zubnih tkiva stalne denticije i adhezivnih materijala	1
17.	Ultrastruktura i priroda veze tvrdih zubnih tkiva mliječne denticije i adhezivnih materijala	1
18.	Promjene u optičkim svojstvima tvrdih zubnih tkiva izazvane demineralizacijom	1
19.	Modeli dentinske preosjetljivosti	1
20.	Razvoj, maturacija, regresivne promjene i tafonomija kosti	1

VOĐENI PRAKTIKUMI

REDNI BROJ	SADRŽAJ VJEŽBE	BROJ SATI
1.	Evidentiranje specifičnih karakteristika zuba i vilica značajne za forenzičku identifikaciju	1
2.	Rad na pločicama ASU DAS	1
3.	Komparativne morfološke analize	1
4.	Razlike u analizama na prirodnim zubima. Studijskim modelima in fotografijama	1
5.	Evidentiranje i analiza ruga palatina	1
6.	Evidentiranje i analiza otisaka usana	1
7.	Rad na ekstrahiranim zubima – priprema modela i mikroskopiranje	1
8.	Sistemi klasifikacije zubnog trošenja	1
9.	In vitro ispitivanje optičkih svojstava tvrdih zubnih tkiva	1
10.	Analiza paleoodontoloških skeletalnih i dentalnih ostataka	1
11.	Vizuelne i morfološke tehnike procjene dentalne dobi	1
12.	Radiološke i histološke tehnike procjene dentalne dobi	1
13.	Antropološke metode procjene spola metodama analize lobanje, vilica i zguba	1
14.	UspoređIvanje AM i PM podataka	1
15.	Pisanje antropološkog i forenzičkog izvještaja	1
16.	Radiološke analize viličnih kostiju	1
17.	Radiološke metode analize korijenskog sistema (CBCT, radioviziografija)	1
18.	Radiološke metode analize fisurnog sistema	1

19.	Kompjuterski programi u antropološkim i forenzičkim istraţivanjima	1
20.	Eksperimentalni modeli tragova ugriza	1

SEMINARI

Seminar 1:	Morfometrija u praksi
Seminar 2:	PoreĎenje obrazaca varijabilnosti u obliku
Seminar 3:	Analiza tragova ugriza
Seminar 4:	Geometrijska morfometrija
Seminar 5:	GWAS (Genome-Wide Association Stidies) dentaljnog karijesa

LITERATURA

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10. Ivanović A, Kalezić M. Evoluciona morfologija – teorijske postavke i geometrijska morfometrija, Biološki fakultet Univerziteta u Beogradu, 2013.

Code:	Naziv predmeta: **DENTALNA PATOLOGIJA S ENDODONCIJOM**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Dijagnostička terminologija u endodonciji	2
2.	Primjena kompozitnih ispuna u transkaninom sektoru	2
3.	Metode određivanja boje u estetskoj stomatologiji	2
4.	Problem adhezije u restaurativnoj stomatologiji	2
5.	Koncept monobloka u endodonciji	2
6.	Značaj irigacije u endodontskoj terapiji; djelovanje koncentracije, prednosti kombinacije irigansa	2
7.	Kompromitirajući faktori u u endodontskoj terapiji	2
8.	Metodologija istraţivanja u endodonciji in vitro I	2
9.	Metodologija istraţivanja u endodonciji in vitro II	2

10.	Upotreba računarom podrţanih sistema u restaurativnoj stomatologiji i endodonciji	2

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	CBCT u interpretaciji endodonciji	3
2.	Primjena ultrazvuka kod revizije neadekvatnih punjenja korijenskih kanala	3
3.	Tehnike opturacije	3
4.	Kalcifikacije endodontskog prostora	3
5.	Sistemska medikacija u endodonciji	3
6.	Specifičnosti uzorkovanja zubnih tkiva za eksperimentalno istraživanje	3
7.	Baze podataka relevantne za istraţivanja u restaurativnoj stomatologiji i endodonciji	2

Code:	Naziv predmeta: **STOMATOLOŠKA PROTETIKA S DENTALNOM IMPLANTOLOGIJOM**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Kako napisati doktorski rad iz oblasti fiksne protetike od ideja do zaključaka. Pristup pisanju rada, razgovor sa mentorom, odabir područja, definisanje problema, uvid u dosadašnja istraţivanja iz izabrane oblasti, svrsishodnost pisanja odabrane teme, naučni doprinos, definisanje naslova, uvodni dio, definiranje ciljeva, definiranje hipoteza, metodologija, materijal, formiranje uzoraka, rezultati, statistika, diskusija, zaključci.	1
2.	Naučna promišljanja u fiksnoj protetici, izbor modela istraţivanja, in vivo, in vitro, na pacijentima, parametri za mjerenje u ustima pacijenta,	1
3.	Karakteristike materijala (krtost, krutost, plastičnost, čvrstoća, jačina, rezilijentnost). Otpornost na udar. Tvrdoća stomatoloških materijala. Opterećenje materijala istezanjem, pritiskom, savijanjem, smicanjem i torziono. Modus elastičnosti.	1
4.	Keramički sistemi u fiksnoj protetici. Osobine feldspat keramike. Osobine fluor-apatitne keramike. Osobine cirkona: polimorfizam i transformaciona ţilavost. Osobine litijdisilikatne keramike. Primjena različitih keramičkih materijala u fiksnoj protetici.	1
5.	Boja. Teorija o boji. Fizički aspekti boje. Fiziološki aspekti boje.	1
6.	Fiksna zubna nadoknada i pacijent – subjektivna i objektivna procjena kvalitete nadoknade, uticaj na kvalitet ţivota.	1

7.	Restauracija endodontski tretiranih zuba. Plan terapije i zadaci.	1
8.	Vrste korijenskih nadogradnji.	1
9.	Fiziološka optimalna okluzija i njena obiljeţja	1
10.	Sistemski faktori u patogenezi TMD, okluzija kao faktor TMD, prevencija TMD i poremećaja	1
11.	Biološke osnove bezubosti i biološke osnove krezubosti	1
12.	Opterećenje potpornih tkiva protetskim nadoknadama	1
13.	Savremene terapijske procedure u zbrinjavanju krezubosti	1
14.	Principi kompjuterizovane stomatologije	1
15.	Protetska nadoknada i pacijent,subjektivna i objektivna procjena kvaliteta nadoknade,uticaj na kvalitet ţivota	1
16.	Pristup u rješavanju protetskih problema kod starih osoba i specifičnost terapije	1
17.	Materijali u oralnoj implamntologiji. Metalni, nemetalni i sloţeni materijali. Fizičko-mehaničke i biološkekarakteristike implantatnih materijala.	1
18.	Uticaj mikrodizajna implantata na bioadhezivnost i proces oseointegracije implantata. Naponi i deformacije implantata u funkciji.	1
19.	Terapijske mogućnosti kod pacijenata sa deficitom kosti. Hirurške procedure za augmentaciju kosti.	1
20.	Sinus lift – specifičnost hirurških procedura.	1

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Praktična realizacija postupka pisanja doktorskog rada.	1
2.	Praktičan pristup metodologiji istraţivanja.	1
3.	Gradivni stomatološki materijali – keramika. Podjela i hemijski sastav. Fizičke i mehaničke karakteristike keramičkih materijala i njihov uticaj na obadir keramičkog materijala za pojedine indikacije.	1
4.	Visoke tehnologije u obradi stomatoloških materijala. CAD/CAM dizajniranje, sinterovanje i obrada.	1
5.	OdreĎivanje boje zuba. Konvencionalno odreĎivanje boje zuba. Instrumentalno odreĎivanje boje zuba.	1
6.	Subjektivna i objektivna procjena kvalitetea fiksnog protetskog rada i uticaj na kvalitet ţivota.	1
7.	Indikacije za izradu korijenske nadogradnje. Plan terapije, izbor materijala i postupak izrade.	1
8.	Ispitivanje distribucije naprezanja korijena zuba restauriranog različitim vrstama nadogradnji.	1
9.	Prikupljanje i analiza naučnih činjenica	1
10.	Metode evaluacije uspješnosti različitih protetskih nadoknada	1

11.	Analiza kliničkih ,instrumentalnih i laboratorijskih metoda za potrebe istraţivanja	1
12.	Terapijski modaliteti	1
13.	Evaluacija postojećih naučnih dokaza i iskustvenih činjenica	1
14.	Prikazi slučajeva iz naučnoistraţivačkog rada i slučajevi iz prakse	1
15.	Prikazi slučajeva iz naučnoistraţivačkog rada i slučajevi iz prakse	1
16.	Prikazi slučajeva iz naučnoistraţivačkog rada i slučajevi iz prakse	1
17.	Prospektivna istraţivanja ugradnje endosealnih implantata.	1
18.	Augmentacione procedure u imolantologiji (čvrsta i meka tkiva).	1
19.	Prospektivna istraţivanja ugradnje zamjenskog materijala za kost.	1
20.	Kompjuterski voĐene implantološke procedure.	1

SEMINARI

REDNI BROJ	**SEMINARI**	**BROJ SATI**
1.	Postupak pisanja doktorskog rada.	1

2.	Planiranje izrade dizajna istraţivanja.	1
3.	Analiza savremene literature.	1
4.	Publikovanje radova.	1
5.	Planiranje prospektivnnog istraţivanja u implantologiji.	1

Code:	Naziv predmeta: **ORALNA MEDICINA I PARODONTOLOGIJA**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Savremeni aspekt parodontalne terapije infrakoštanih dţepova	2
2.	Biološki aspekt regenerativne terapije	2
3.	Plastično hirurški zahvati u rekonstrukciji recesija	2
4.	Primjena bio membrana i koštanih supstituenata u parodontologiji	2
5.	Ciljevi, problemi i estetska rješenja u parodontologiji	2

6.	Promjene na oralnim sluznicama kod oboljelih od HIV i hepatitisa	2
7.	Dijagnoza i terapijski protokol kod pacijenata sa krvnim oboljenjima	2
8.	Oralne prekanceroze- dijagnoza, dif. dg. i terapijski protokol	2
9.	Diferencijalna dijagnoza oralnih ulceracija	2
10.	Medikamentozna terapije bolesti oralnih sluznica	2

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Procjena parodontalnog zdravlja i Rtg analiza nakon neinvazivnih metoda u parodontologiji	2
2.	Postavljanje dijagnoze za operativni zahvat i priprema pacijenata	2
3.	Rtg analize i kliničke procjene parodonta nakon parodontalne hirurgije	1
4.	Prikaz pacijenata sa parodontalnim hirurškim zahvatima	2
5.	Pulpo periodontalne komplikacije, dijagnoza, terapija	1
6.	VoĐena koštana i tkivna regeneracija, kada i zašto?	2
7.	Značaj potporne terapije “Reacolla“	1
8.	Prikaz kliničkih sličajeva i diferencijalna dijagnoza oralnih ulceracija	1

9.	Klinički pregled i dijagnoza bolesti oralnih sluznica kod ovisnika o psihoaktivnim supstancama	1
10.	Dijagnoza i terapijski protokol kod oboljelih od HIV-a	1
11.	Klinička i laboratorijska evaluacija oralnih promjena kod krvnih diskrazija	1
12.	Evaluacija kliničkih nalaza, lab i ph nalaza kod prekanceroznih lezija	1
13.	Medikamentozna terapija – značaj i nus pojave	1
14.	Klinička evaluacija povezanosti bolesti sluznice sa bolestima koţe	1
15.	Evaluacija terapijskih postupaka u liječenju autoimunih bolesti usne šupljine- kroz istraţivanja	1
16.	Analiza uspješnosti različitih metoda prekrivanja recesija – kroz istraţivanja	1

Code:	Naziv predmeta: **PREVENTIVNA STOMATOLOGIJA I PEDODONCIJA**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik:			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Endodontski tretman mliječnih zuba	2

2.	Endodontski tretman mladih trajnih zuba	2
3.	Biomaterijali u dječijoj stomatologiji	2
4.	Eksperimentalna istraţivanja biokompatibilnosti i citotoksičnosti dentalnih materijala	2
5.	Radiološka analiza parodonta u dječijem uzrastu	2
6.	Ispitivanja uticaja terapijskih i profilaktičkih sredstava u liječenju gingivitisa i parodontitisa u dječijem uzrastu	2
7.	Prepoznavanje zlostavljanog djeteta- uloga stomatologa	2
8.	Istraţivanja u oblasti prepoznavanja i prijavljivanja zlostavljane i zanemarivane djece	2
9.	Epidemiološki aspekt dijagnostičkih kriterija dentalnog karijesa i njihov uticaj na procjenu prevalence i uznapredovalosti karijesa u populaciji	2
10.	Dentalna anksioznost i bihevioralne tehnike u dječijoj stomatologiji	2

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Mikrobiološki markeri oralnih bolesti u dječijem uzrastu i njihova primjena	1
2.	Povezanost ishrane i oralnog zdravlja	1
3.	Zaštita pulpo-dentinskog kompleksa maldih trajnih zuba	1

4.	Primena analize kvalitativnog i kvantitativnog sastava pljuvačke u dijagnostici oralnih bolesti	1
5.	Analiza učestalosti oralnih manifestacija razvojnih anomalija i sindroma u djece	1
6.	Analiza istraţivanja procjene straha i dentalne anksioznosti kod djece i adolescenata	1
7.	Analiza uspješnosti različitih metoda endodontskog tretmana mliječnih zuba	1
8.	Klinički značaj minimalno invazivnih zahvata u dječijoj stomatologiji	1
9.	Specifičnosti upotrebe radiologije u istraţivanjima orofacijalne regije u dječijem uzrastu	1
10.	Identifikacija uticaja sistemskih bolesti na oralno zdravlje u dječijem uzrastu	1
11.	Analiza metoda evaluacije različitih materijala u restaurativnoj stomatologiji	1
12.	Analiza metoda za procjenu efikasnosti preventivnih mjera i profilaktičkih zahvata za zaštitu oralnog zdravlja kod djece i adolescenata	1
13.	Istraţivanja oralnog zdravlja u trudnoći	1
14.	Privremeni kompozitni mostovi u pedodonciji	1
15.	Procjena znakova zlostavljane i zanemarivane djece	1
16.	Anketa kao metod ispitivanja znanja, stava i prakse medicinskog osoblja u prepoznavanju zlostavljane i zanemarivane djece	1
17.	Opšte i specifične mjere prevencije trauma u stomatologiji	1
18.	Evaluacija stomatoloških istraţivanja u zajednici	1
19.	Anomalije zuba, definisanje morfoloških i topografskih karakteristika	1

20.	Matične ćelije-mogućnosti primjene u regenerativnoj terapiji	1

Code:	Naziv predmeta: **ORTODONCIJA**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik:			

CILJEVI PREDMETA

Osposobiti studente da samostalno mogu:

- Pretraživati literaturu iz domena ortodoncije, kako sa aspekta bazičnih ortodontskih istraţivanja tako i kliničkih i epidemioloških istraţivanja
- Da samostalno prezentira rezultate istraţivanja

SVRHA PREDMETA

Pružiti studentima temeljna i nova saznanja iz područja ortodoncije i to primjene dijagnostičkih metoda, terapijskih ishoda, epidemioloških studija, te okluzije i temporomandibularnog zgloba, i multidisciplinarnog područja istraţivanja.

ISHODI UČENJA

Student će biti osposobljen da:

- kritički pristupi teorijama rasta i razvoja kraniofacijalnog sistema
- klasificira ortodontske nepravilnosti prema različitim kriterijima
- procijeni stepen potrebe za ortodontskim tretmanom

METODE UČENJA

Predavanja, prktični rad sa pacijentima, pisanje preglednih naučnih članaka.

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI

1.	Rtg i fotogrametrijska DG	7
2.	Terapijski ishodi ortodontskog tretmana	5
3.	Eksperimentalna istraţivanja u ortodonciji	4
4.	Multidisciplinarna istraţivanja	4

VOĐENI PRAKTIKUMI

	REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
Rtg i fotogrametrijska DG	1.	Analize OPG	2
	2.	Telerentgen analize	2
	3.	Morfometrijske analize	2
	4.	Analize fotografija	1
Terapijski ishodi ortodontskog tretmana	5.	Ţeljeni i neţeljeni efekti terapije u ortodonciji	2
	6.	Ţeljeni i neţeljeni efekti terapije u ortodonciji	2
	7.	Ţeljeni i neţeljeni efekti terapije u ortodonciji	1
Eksperimentalna istraţivanja u ortodonciji	8.	Eksperimentalno pomjeranje zuba	2
	9.	Finith element analize	1

	10.	Finith element analize	1
Multidisciplinarna istraţivanja	11.	Interdisciplinarno područje istraţivanja	2
	12.	Interdisciplinarno područje istraţivanja	1
	13.	Interdisciplinarno područje istraţivanja	1

SEMINARI

1. Rtg i fotogrametrijska DG (1 pregledni članak)
2. Terapijski ishodi ortodontskog tretmana (1 pregledni članak)
3. Eksperimentalna istraţivanja u ortodonciji (1 pregledni članak)
4. Multidisciplinarna Istraţivanja (2 pregledna članka)

Code:	Naziv predmeta: **ORALNA HIRURGIJA SA DENTALNOM IMPLANTOLOGIJOM**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik:			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Predprotetska hirurgija	1

2.	Predprotetska hirurgija	1
3.	Predprotetska hirurgija- aspekt hirugije koštanih struktura	1
4.	Predprotetska hirurgija- aspekt hirugije koštanih struktura	1
5.	Predprotetska hirurgija- aspekt hirugije koštanih struktura	1
6.	Predprotetska hirurgija- aspekt hirurgije mekih tkiva	1
7.	Predprotetska hirurgija- aspekt hirurgije mekih tkiva	1
8.	Predprotetska hirurgija- aspekt hirurgije mekih tkiva	1
9.	Hirurgija cističnih tvorevina mekih tkiva	1
10.	Hirurgija cističnih tvorevina mekih tkiva	1
11.	Benigni tumori u oralnohirurškoj kazuistici	1
12.	Benigni tumori u oralnohirurškoj kazuistici	1
13.	Hemangiomi	1
14.	Hemangiomi	1
15.	Odontomi i dentogeni tumori	1
16.	Odontomi i dentogeni tumori	1
17.	Keratociste i cistama slične tvorevine	1

18.	Keratociste i cistama slične tvorevine	1
19.	Keratociste i cistama slične tvorevine	1
20.	Keratociste i cistama slične tvorevine	1

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Mogućnosti apikotomije višekorijenih zuba	1
2.	Mogućnosti apikotomije višekorijenih zuba	1
3.	Mogućnosti apikotomije višekorijenih zuba	1
4.	Mogućnosti apikotomije višekorijenih zuba	1
5.	Hirurško zbrinjavanje oroantralnih komunikacija i fistula	1
6.	Hirurško zbrinjavanje oroantralnih komunikacija i fistula	1
7.	Hirurško zbrinjavanje oroantralnih komunikacija i fistula	1
8.	Hirurško zbrinjavanje oroantralnih komunikacija i fistula	1
9.	Hirurški tretman odontogenih infekcija	1
10.	Hirurški tretman odontogenih infekcija	1
11.	Hirurški tretman odontogenih infekcija	1

12.	Hirurški tretman odontogenih infekcija	1
13.	Antibiotici u OH praksi	1
14.	Antibiotici u OH praksi	1
15.	Premedikacija i profilaksa OH zahvata	1
16.	Premedikacija i profilaksa OH zahvata	1
17.	Oralno hirurški tretman pacijenata sa mentalnim i fizičkim invaliditetom	1
18.	Oralno hirurški tretman pacijenata sa mentalnim i fizičkim invaliditetom	1
19.	Oralno hirurški tretman pacijenata sa mentalnim i fizičkim invaliditetom	1
20.	Oralno hirurški tretman pacijenata sa mentalnim i fizičkim invaliditetom	1

Code:	Naziv predmeta: **MAKSILOFACIJALNA HIRURGIJA**		
Nivo: postdiplomski	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik:			

TEORIJSKA NASTAVA

REDNI BROJ	**SADRŽAJ PREDAVANJA**	**BROJ SATI**
1.	Infekcija dubokih prostora glave i vrataopćenito	2

2.	Specifične upale glave i vrata	2
3.	Infekcije koštanog tkiva viscerokranija	2
4.	Prijelomi koštanih struktura visceralnog kranija i povrede mehkih tkiva	2
5.	Oboljenja kranijalnih nerava	2
6.	Oboljenja temporormandibularnog zgloba	2
7.	Oboljenja pljuvačnih ţlijezda	2
8.	Tumori maksilofacijalne regije	2
9.	Urodjene anomalije mehkih tkiva i koštani deformiteti maksilofacijalne regije	2
10.	Rekonstruktivne procedure u maksilofacijalnoj hirurgiji i estetska hirurgija lica	2

VOĐENI PRAKTIKUMI

REDNI BROJ	**VOĐENI PRAKTIKUM**	**BROJ SATI**
1.	Analiza osnovnih dijagnostičkih procedura u hirurgiji glave i vrata MRI i CT, EHO i sl.	2
2.	Klinički pregledi/inspekcija-direktoskopija, indirektoskopija, palpacija, perkusija itd./	1
3.	Formiranje istorije bolesti za hospitalnog pacijenta	2

4.	Manje invazivne dijagnostičke procedure u MFH hirurgiji	1
5.	Manje interventne hirurške procedure u MFH hirurgiji ambulantnog tipa	1
6.	Provođenje u operacionoj sali	2
7.	Praćenje lokalnog i opšteg statusa u ranom postoperativnom periodu	2
8.	Provođenje u operacionoj sali videokonferencija	1
9.	Provođenje u operacionoj sali videokonferencija	2
10.	Provođenje u operacionoj sali videokonferencija	1
11.	Provođenje u operacionoj sali videokonferencija	1
12.	Provođenje u operacionoj sali videokonferencija	1
13.	Provođenje u operacionoj sali	1
14.	Provođenje u operacionoj sali	1
15.	Provođenje u operacionoj sali	1

Code:	Naziv predmeta: DENTALNA IMPLANTOLOGIJA		
Nivo: III ciklus studija	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vodeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ
l .	Bioinžinjering u dentalnoj implantologiji. Objasniti strukturu i svojstva materijala od kojih se izrađuju dentalni implantati i protetske komponente za dentalnu im lantolooi'u.	2
2.	Primjena i pravilan odabir radioloških metoda u dentalnoj in•łplantologiji. Prezentirati fundamentalne radiološke metode koje se koriste za dijagnosticiranje i planiranje u dentalnqj implantologiji. Tokom predavanja ce biti LI detalje objašnjena upotreba Sidex i Galileos implant planing softvera.	4
3.	Planiranje tretmana i operativne procedure u dentalnoj implantologiji. Objasniti osnovne postulate planiranja u dentalnoj implantologiji sa osvrtom na anatomske limite i fiziologiju kosti. Dati 'korak po korak" prikaz operativnih procedura u dentalnoj implantologiji.	4
4.	Periimplantna histologija. Predavanje će približiti odnos izmedu inłpld111aLa i okolnog koštanog tkiva i biološke promjene koje nastaju Il koštanom tkivu nakon insercije in-łplantata.	3
5.	Prikaz slučajeva u dentalnoj implantologiji. Kroz prikaz slučajeva će biti prezentiran pravilan odabir pacijenata, planiranje u dentalnoj implantologiji, prikaz najnovijih strateških operativnih procedura ugradnje implantata, preporuke,	4

	kako bi se umanjile postoperativne komplikacije. Svaki slučaj ce biti detaljno analiziran i diskutovan.	
6.	Stomatološka protetika u dentalnoj implantologiji Tokom predavanja studentima doktorskog studija ce se dati detaljna didaktička i klinička upustva u vezi tehnika i procedura s ciljem uspješne i potpune rehabilitacije pacijenata protetskim suprastrukturama nošenim dentalnim implantatima. Bit ce predstavljene napredne kliničke i laboratorijske procedure sa naglaskom na komponente za restauraciju parcijalno i totalno bezubih aci'enata.	3

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Upoznavanje sa različitim brendovima dentalnih implantata na tržištu prednosti i nedostatci	2
2.	Selekcija pacijenata za implantaciju	2
3.	Upotreba RTG5 RVG snimaka i OPG snimaka u implantologiji analiza slučajeva	2
4.	Upotreba 3 DCTCB aparata u implantologiji te analiza slučajeva uz upotrebu Sidex i Galileos implant planing softvera.	1
5.	Planiranje postavke implantata u gornjoj vilici sa osvrtom na anatomske limite i fiziologiju kosti	1
6.	Ilirurške procedure sinus lift operacije	1
7.	Planiranje postavljanja implantata LI donjoj vilici sa osvrtom na anatomske limite i fiziolo iju kosti	1
8.	Prikaz postavljanja implantata u gornjoj vilici područje frontalnih zuba	1
9.	Prikaz postavljanja implantata u gornjoj vilici područje bočne regije	1

10.	Prikaz postavljanja implantata u donjoj vilici, područje frontalnih zuba	1
11.	Prikaz postavljanja implantata u donjoj vilici područje bočne regije	1
12.	Prikaz postavljanja gingiva formera nakon otvaranja implantata	1
13.	Odabir suprastruktura za odredene slučajeve	1
14.	Prikaz protetskih radova na implantatima — nedostatak jednog zuba	1
15.	Prikaz protetskih radova na implantatima — nedostatak više zuba	1
16.	Prikaz protetskih radova na implantatima — nedostatak svih zuba	1
17.	Prikazi mogućih komplikacija i neuspjeha u dentalnoj implantologiji	1

Code:	Naziv predmeta: DENTALNA RADIOLOGIJA		
Nivo: III ciklus studija	Godina: II	Semestar: III	ECTS kredita: 10
Status: kolegij	Predavanja: 20	Vođeni praktikumi: 20	Seminari: 5
Odgovorni nastavnik			

TEORIJSKA NASTAVA

REDNI BROJ	SADRŽAJ PREDAVANJA	BROJ SATI
1.	Mjesto uloga i značaj radioloških procedura u stomatologiji	3
2.	Imaging metodi u dijagnozi bolesti ološacijalne regije	3
3.	Digitalni ortopantomografski metod	2
4.	Dijagnostikovanje oboljenja TM zgloba — radiografske metode	2
5.	Dijagnostikovanje oboljenja TM zgloba — MR metoda	2
6.	Dijagnostika bolesti velikih pljuvačnih žlijezda — mogućnosti radiografskih metoda i MR metod	2
7.	Imaging dijagnostika lezija u mekotkivnim strukturama orofacijalne regije	3
8.	Rendgen slika najčešćih sindroma vezanih za orofacijalnu regiju	3

VOĐENI PRAKTIKUMI

REDNI BROJ	VOĐENI PRAKTIKUM	BROJ SATI
1.	Uloga stomatologa u obavljanju pojedinih radiografskih i dijagnostičkih procedura	3
2.	Tumačenje slike dobijene imaging metodama	3
3.	Definisanje indikacija za obavljanje različitih dijagnostičkih radiografskih procedura	2
4.	Osnovni principi zaštite pacijenta i osoblja u toku izvođenja različitih radiografskih procedura	2
5.	Definisanje i kritički osvrt na indikacije za obavljanje digitalnih ortopantomografskih metoda	3
6.	Principi izvođenja pregleda MR metodom	2
7.	Valorizacija prednosti i nedostataka radiografskih i digitalnih metoda	2
8.	Uporedna analiza rezultata radiografskih i MR procedura u dijagnosticiranju bolesti orofacijalne regije	3

UNIVERSITY OF SARAJEVO

FACULTY OF DENTISTRY WITH DENTAL CLINICAL CENTER

DOCTORAL STUDIES

(III cycle of studies at the Faculty of Dentistry with dental clinical center)

Sarajevo, 2023.

CURRICULUM

1. GENERAL PART

1.1. Name of study, scientific field

Doctoral studies at the University of Sarajevo - Faculty of Dentistry with dental clinical center belong to the scientific field of biomedicine and health care.

1.2. Holder of studies

The holder of the study is the University of Sarajevo. The University entrusts the organization and implementation of the program to the Faculty of Dentistry with dental clinical center. The study rules are determined by the study rules for the third study cycle of the University of Sarajevo adopted by the Senate of the University of Sarajevo.

1.3. Study enrollment conditions

Candidates from Bosnia and Herzegovina and abroad who have, as a rule, graduated from the Faculty of Dentistry can enroll in the studies under the same conditions.

In accordance with the decision of the Senate of the University of Sarajevo number 01-260/20 of September 30, 2020, *for the faculties of the Council of the Group of Medical Sciences (except for the Faculty of Veterinary Medicine), for clinical areas, a candidate cannot enroll in doctoral studies without passing a specialist exam*.

For the candidate who has not completed the university integrated study of dentistry, the Council for Doctoral Studies may, when enrolling in the doctoral study, determine to take individual subjects or parts of subjects (different subjects) from the university integrated study od dentistry. Candidates who have completed their studies abroad or attended a part of the teaching during their study abroad must undergo the procedure of academic recognition of the foreign higher education qualification or the equivalence of the attended part of the teaching.

Knowledge of the English language at a level that enables communication through speech and writing, following scientific and educational literature, writing scientific papers and using computer programs is mandatory.

1.4. Critera and procedures for selecting participants

Enrollment in doctoral studies is carried out on the basis of a public competition. The decision to announce a competition for admission to doctoral studies, on the proposal of the Council for Doctoral Studies, is made by the Teaching-Scientific Council of the Faculty, with the consent of the Senate of the University of Sarajevo.

Detailed provisions on the announcement of a public competition for study admission, the admission procedure and student enrollment are determined by the Study Rules for the third cycle of studies at the University of Sarajevo.

Enrollment of students for doctoral studies will be done on the basis of the admission procedure, without the obligation to take an entrance exam.

Candidates for doctoral studies who meet the enrollment requirements will be selected in the admissions process based on the following criteria:

- success in previous studies;
- demonstrating the results of scientific and research work;
- motivation for scientific and research work.

Success in previous studies and demonstration of the results of scientific and research work is proven by competition documentation (copies of papers, books, etc.).

2. DESCRIPTION OF THE PROGRAM

2.1. Program structure

Doctoral studies last 3 years (6 semesters) and, with appropriate commitment and continuous work, enable an even workload for students. Doctoral study is evaluated with at least 180 ECTS points (for the completion of studies and all prescribed obligations lasting at least 3 years) or at least 60 ECTS points per year (the work required to master one academic year is at least 60 ECTS). The study program leads to the scientific title of Doctor of Dental Sciences.

Doctoral study consists of:

1. attending classes and monitoring the evaluation of results through established knowledge tests;
2. selection of the scientific field in which the doctoral dissertation will be done and selection of a mentor;
3. defining the scientific field;
4. application and presentation of the chosen topic, approach and scientific method of the doctoral dissertation/work;
5. scientific research and practical work on the preparation of a doctoral dissertation;
6. publishing parts of the research in reference journals;
7. defending the results of the doctoral dissertation;
8. public defense of the doctoral dissertation.

The study program is implemented through classes, scientific and research work and the preparation and defense of a doctoral dissertation. The teaching process is carried out through lectures, seminars, consultations, guided practicals and other established forms of teaching.

The curriculum consists of: study areas, mandatory modules (methodological subjects), branch subjects, guided by practicals and research work.

In the first semester of study a single class is organized for all students from the group of methodological subjects and in the second semester classes from college (branch subjects) that the student chooses from 10 offered colleges (subjects) that correspond to the home fields of the Faculty of Dentistry with dental clinical center. In the first year, the student must choose a field of scientific activity and an academic advisor (potential mentor) and create an Individual Study Plan that is approved by the Postgraduate Studies Council. In the second year of study, the student must submit a proposal for the topic of the doctoral dissertation (project) and start defending it. In the third year, the student approaches the preparation of a doctoral dissertation. A doctoral candidate is required to have published or accepted for publication at least one scientific paper, thematically related to doctoral research, before defending the doctoral thesis.

Doctoral study is based on the direct scientific and research work of the doctoral candidate on the doctoral thesis, with the supervision of a competent mentor. Therefore, the most important mandatory scientific activity of the doctoral candidate is the individual scientific and research work on the doctoral thesis. The study ends with mastering all prescribed study obligations – passing all exams, writing a doctoral thesis, mastering the conditions set for scientific work and submission of the finished doctoral thesis, and public defense of the doctoral thesis.

The program of the proposed doctoral study includes:

1. organized classes – 60 ECTS
2. work on the doctoral dissertation – 120 ECTS, which consists of:
    a. extracurricular scientific activities in the field of doctoral dissertation
    b. work on the preparation and writing of a doctoral dissertation

All doctoral candidates are required to obtain a minimum of 180 ECTS to complete their studies.

After completing the third cycle of studies, the student:

- demonstrates the ability to conduct independent research in the field of study and independently apply research skills and methods in his field;
- demonstrates the ability to synthesize, explicate, design, apply, design, implement and accept science-based processes;
- through original research, he contributes to the expansion of the boundaries of knowledge through scientific work, some parts of which deserve publication in national and international reference journals publications;
- is capable of critical analysis, evaluation and synthesis of new and complex ideas, and
- promotes, in an academic and professional context, technological, social or cultural progress in a knowledge-based society.

2.2. Organized teaching

From organized classes, the doctoral candidate must acquire a total of at least 60 ECTS points to complete the studies. The doctoral candidate must acquire at least 30 ECTS from the first

credit group (methodological subjects) and at least 30 ECTS from the second credit group (colleges).

In agreement with the academic advisor, the doctoral candidate can choose any subject from the optional modules offered.

Candidates for admission who obtained the title of Master of Dental Sciences before the introduction of the Bologna system of integrated studies are recognized with 60 ECTS credits (organized teaching activities). The remaining amount of 120 ECTS points should be acquired by these students by working on a doctoral dissertation through extracurricular scientific activities in the field of the doctoral dissertation, and work on the preparation and writing of the doctoral dissertation.

On the basis of intra-university, inter-university and/or inter-faculty agreements, doctoral students at the Faculty of Dentistry in Sarajevo will have the opportunity to enroll in, listen to and take exams in the subjects of doctoral studies in the field of dental sciences, which are not under the administrative jurisdiction of the Faculty of Dentistry in Sarajevo. Candidates who attended a part of the teaching during their studies abroad must undergo the procedure of equivalence of the attended part of the teaching. The subjects are divided into two credit groups

Methodological subjects

Methodological subjects represent a mandatory module consisting of subjects that are taken only during the first semester of study. Each student is required to enroll at least 30 ECTS points from that group. Methodological subjects are intended to acquire the basic principles of doing scientific and research work, whereby students are introduced to the basics of scientific work and research procedures. The goal of methodological subjects is the acquisition of basic scientific skills, knowledge and attitudes necessary for research work in the scientific field of dentistry. The purpose of the module is to train doctoral candidates in theoretical and practical aspects, which are a prerequisite for successfully completing doctoral studies and training for scientific and research work. All subjects of the compulsory module must be enrolled, listened to and passed. Subjects of the compulsory module are entered in the first part of the Individual Study Plan, index and record of exams.

Colleges – branch-oriented subjects

In the second semester, the student chooses college from the 10 main fields offered by the Faculty of Dentistry of the University of Sarajevo, of which a total of 30 ECTS credits must be obtained in addition to guided practicals. Branch subjects are entered in the Individual Study Plan, index and record of exams. In agreement with the academic advisor, the doctoral candidate can choose any subject from the offered branch subjects. From the list of offered subjects, the doctoral candidate, in agreement with the mentor, will freely choose those that are close to the methodology and/or contain the topics of the doctoral thesis. In the study

program within the college, subjects will be offered that include diverse content from the scientific fields of the Faculty of Dentistry of the University of Sarajevo.

Colleges are taken in the first year of study and consist of branch-oriented subjects that include contemporary scientific knowledge, knowledge and problems in the narrower branches of dentistry: tooth morphology with dental anthropology and forensics, dental pathology with endodontics, dental prosthetics with dental implantology, oral medicine and periodontology, preventive dentistry and pedodontics, orthodontics, oral surgery with dental implantology, maxillofacial surgery, dental implantology and dental radiology. The goal of optional modules, subjects and practicums is to solve specific methodological and/or substantive scientific questions related to the doctoral candidate's scientific and research work on the doctoral thesis.

Teaching within branch-oriented subjects consists of lectures, seminars and guided practicals. Forms of teaching activities are: lectures given by teachers Faculty of Dentistry, Faculty of Medicine, visiting professors from abroad, as well as experts from other scientific and research institutions with verified legal competences, guided practicals and participation in seminars and consultations, which will be regularly organized during the study.

For the calculation of ECTS points in the proposal for organized teaching of the doctoral study, a recommended methodology was used, comparable to the methodology applied for European doctoral studies in the field of biomedicine and healthcare. The point value is the result of an assessment of the total load of students required to master the lessons and pass the exam. One ECTS credit is equivalent to a total student load of 25 contact hours (40 weeks of classes per year x 37.5 working hours per week/60). Total workload at the semester level is 750 working hours. The point value of subjects and practicum is an indicator of the total workload of the doctoral candidate, based on the assessment of the amount of total work required to master all forms of active teaching, study the literature required for teaching and the exam, and to pass the exam itself. Active teaching is weighted as follows: number of lecture hours x 1, number of seminar hours x 1.5 and number of guided practicum hours x 2 (P/S/V = 1/1.5/2). The weighting of the student's teaching load is higher for seminars and guided practicums than the weighting for lectures, because candidates must prepare in advance for seminars and practicums by studying relevant literature, and they also do practical work at the practicums. The weighted number of hours of all forms of subject teaching is added up, divided by 25 and rounded to one decimal place, in order to obtain the total workload for active subject teaching expressed in ECTS points.

Exam categories are: 1) oral exam 2) written exam (essay, short essay, modified essay, multiple choice questions) 3) practical exam (practical task, short project, organized structured practical exam).

Teaching load (in ECTS credits) = (P x 1)+(S x 1.5) + (V x 2) / 25

The literature load for classes and exams is based on the assessment that 1 ECTS point (25 hours) is equivalent to the effort required to master 100 pages of doctoral level literature. As a standard, we took 8 pages of literature per lesson. We calculated the number of ECTS points for literature using the formula below and rounded to one decimal place. Literature load (in ECTS points) = (P+S+V) x 8/100.

The ECTS points for teaching and literature load were then added up and multiplied by the weighting for knowledge verification by exam. The weights for each form of the exam are as follows: oral exam 1.1; written essay 1,1; other forms of written test (short essay, modified essay, multiple choice questions) 1.25; practical exam 1.5; the weight for the combined written and oral or practical exam is the sum of the individual weights.

The obtained multiple of ECTS points is rounded to a whole number or a half whole number. This number is the final value of ECTS points for a particular subject and/or practicum.

Total ECTS points = (ECTS teaching + ECTS literature) x exam weight

2.3. Work on a doctoral dissertation

Doctoral study is based on the direct scientific and research work of the doctoral candidate on the doctoral dissertation, with the supervision of a competent mentor. The doctoral candidate should be actively involved in scientific research in various ways. The usual criteria for valorizing scientific activity are, in addition to the publication of scientific papers, presentations of scientific results at congresses, conferences, symposia in the country and abroad. The research part of the study program may also include a stay at a targeted scientific training at another laboratory, institute or clinic in the country or abroad. Scientific activity during the doctoral studies is carried out during the entire study, and in the second and third year intensive cooperation with a mentor, seminar work, seminars of the contemporary literature type, publication of work and participation in seminars and scientific gatherings are foreseen.

Therefore, the most important mandatory scientific activity of the doctoral candidate is the individual scientific and research work on the doctoral dissertation. It includes:

a) extracurricular scientific activities in the field of doctoral dissertation;
b) work on the preparation and writing of a doctoral dissertation.

From these activities, each student is required to collect a total of at least 120 for the completion of studies ECTS points, of which work on writing the project, practical work on the material of the doctoral dissertation and work on writing the final version of the doctoral dissertation are worth 75 ECTS points. 120 ECTS credits are equivalent to scientific and research work lasting four semesters (two academic years) full-time.

2.4. Forms and scoring of extracurricular scientific activities in the field of doctoral dissertation

In accordance with European recommendations, the research part of the study program is valued through:

- *in extenso*, original scientific and research publications in which the doctoral candidate is the author or co-author;
- by attending targeted scientific training in another laboratory / institute / clinic, in the country and abroad;

- participation in scientific meetings.

With these forms of extracurricular scientific activity, the candidate must collect 45 ECTS points.

Scientific and research publications:

In extenso, original scientific and research publications should be related to the topic of the doctoral dissertation and published in scientific journals with international peer review.

In extenso original scientific paper published in the journal is scored differently depending on the international database in which the journal is indexed and the author's contribution:

- indexed in the Current Contents (CC) or Science Citation Index (SCI) database (first author/co-authorship) – 15 ECTS
- indexed in relevant internationally recognized databases (first author/co-author) – 10 ECTS

The prerequisite for scoring co-authorship is that the candidate's co-authorship contribution in the paper must be clearly visible.

This scoring system will also recognize publications in the field of the doctoral dissertation that were published in the period up to 3 years prior to enrollment in the doctoral program, up to a maximum of 15 ECTS points.

By publishing scientific and research publications, the candidate can acquire a maximum of 30 ECTS credits.

The prerequisite for submitting the working version of the candidate's doctoral dissertation is one published paper in which the doctoral student is the first author or co-author in a journal that is cited in the Current Contents (CC) database or in the Science Citation Index (SCI) database. The work must be in the field of doctoral dissertation. In this way, the candidate acquires an additional mandatory 15 ECTS points. This work must be published after enrolling in the doctoral program.

Study stays abroad:

As part of extracurricular scientific activities, study stays abroad lasting at least 1 month (1 month = 10 ECTS points) and at most 1 semester (1 semester = 30 ECTS points) will be awarded. The stay on scientific and research work must be reported Council for Doctoral Study at the Faculty of Dentistry with dental clinical center. The doctoral candidate must submit documentation proving his participation in targeted scientific and research training in another laboratory / institute / clinic.

Participation in scientific meetings:

The usual criteria for the valorization of scientific and research activity are the publication of scientific papers and the presentation of scientific papers at congresses, conferences, symposia in the country and abroad.

From these extracurricular scientific activities, each student can collect a maximum of 15 ECTS points during their studies, as shown in Table 1. In this way, points will also be awarded for participating in scientific meetings in the period up to 3 years before enrolling in doctoral studies, if the topic is lectures and presentations in the field of the topic of the doctoral dissertation.

Table 1. Scoring of extracurricular scientific activity through participation in scientific meetings.

Active participation of doctoral student in scientific meetings	**ECTS POINTS**
Oral presentation and abstract accompanied by an international database at an international scientific meeting	10
Poster and abstract at an international scientific meeting	5
Oral presentation and abstract at the local meeting	5
Poster and abstract at the local meeting	2,5

2.5. Preparation and defense of a doctoral dissertation

The topic of the dissertation is based on the plan, program and methodology of original research determined in the application of the topic. The student is obliged to report the topic of the doctoral dissertation in the second year of study (in the third semester). All students enrolled in doctoral studies can start the process of application and acceptance of the topic of the doctoral dissertation immediately after fulfilling the requirements (when they collect 60 ECTS) which also include passed exams from the methodological group of subjects.

The doctoral student ends his studies with a public defense of his doctoral dissertation. All activities that precede the creation of the final version will be valued, including:

- writing the doctoral dissertation project;
- practical work on the material of the doctoral dissertation;
- writing the final version of the doctoral dissertation.

These activities have a total value of 75 ECTS.

The completed doctoral thesis should be submitted for evaluation at the end of the sixth semester. The end of the organized part of the study program will be considered the day when the student submitted the finished doctoral dissertation for evaluation. The end of studies will be considered the day when the doctoral thesis is publicly defended.

Table 2. Overview of scoring by type of scientific activity.

	Name	**Forms of activity**	**Minumum number of points**
Organized teaching	Compulsory teaching activity (methodological subjects)	Lectures, exercicec, seminars through teaching in compulsory subjects	30 ECTS
	Elective teaching activity (college – branch subjects)	Lectures, excercises, seminars, guided practicals through teaching in compulsory subjects	30 ECTS
			Maximum number of points
Work on dissertation	Extracurricular scientific paper from areas of the doctoral dissertation (minimum 45 required ECTS)	Scientific and research papers, presentations of scientific results at professional and scientific meetings and which were published up to three years before enrollment in doctoral studies	15 ECTS
		Scientific and research papers that were published up to three years after enrolling in doctoral studies	30 ECTS
		A scientific and research paper in which the PhD student is the first author or co-author in a journal cited in the Current Contents (CC) database or in the Science database Citation Index (SCI) in the field of doctoral dissertation published after enrollment in doctoral studies *	15 ECTS
		Study stays in the laboratory / Institute / clinic abroad	30 ECTS
		Presentations of scientific results at congresses, conferences, symposia in the country and abroad	15 ECTS
	Work on the preparation and	Preparation and writing of a doctoral dissertation project	15 ECTS

	defense of a doctoral dissertation (75 ECTS)	Practical work on the material of the doctoral dissertation	30 ECTS
		Writing the final version of the doctoral dissertation	30 ECTS
Total180 ECTS			

*This activity is mandatory and is a condition for submitting the doctoral dissertation.

3. RHYTM OF STUDY AND OBLIGATIONS OF STUDENTS

3.1. Obligations of doctoral candidates in the first year

a) Attended and passed subjects of the mandatory module of the methodology group of subjects worth 30 ECTS.
b) Completed branch subjects (colleges) worth at least 30 ECTS.
c) Selected field of scientific activity and candidate's academic adviser (potential mentor).
d) Created and approved Individual Study Plan.

With the help of the selected PhD mentor, the student should create and submit his Individual Study Plan to the Doctoral Study Council in accordance with Article 31 of the Study Rules for the Third Cycle of Study at the University of Sarajevo. The Individual Plan should be submitted to the Council for Doctoral Studies in the first year of study, and no later than the end of the second semester of study. The Council for Doctoral Studies approves the entire Individual Study Plan no later than enrollment in the 3rd semester, i.e. the second year of study. The individual study plan is co-signed by the doctoral supervisor and the student.

The individual plan contains:

- information about the doctoral candidate and mentor;
- information about the field of scientific activity and the branch in which he will do his doctoral dissertation;
- information about colleges (branch subjects) that he plans to take and pass in the 2nd year of study.

YEAR OF STUDY	PLAN	ECTS	TOTAL
I YEAR OF STUDY (I AND II SEMESTER)	1. Methodological subjects (mandatory teaching activity) 1. RESEARCH METHODOLOGY 2. EPIDEMIOLOGICAL METHODS AND BIOSTATISTICS IN DENTAL SCIENCE AND PRACTICE 3. BIOLOGICAL BASIS OF THE OROFACIAL SYSTEM 4. PUBLISHING IN BIOMEDICAL SCIENCES	30	60
	2. Elective teaching activity 1. MORPHOLOGY OF TEETH WITH DENTAL ANTHROPOLOGY AND FORENSICS 1 2. DENTAL PATHOLOGY WITH ENDODONTICS 1 3. DENTAL PROSTHETICS WITH DENTAL IMPLANTOLOGY 1 4. ORAL MEDICINE AND PERIODONTOLOGY 1 5. PREVENTIVE DENTISTRY AND PEDODONTICS 1 6. ORTHODONTICS 1 7. ORAL SURGERY WITH DENTAL IMPLANTOLOGY 1 8. MAXILLOFACIAL SURGERY 1 9. DENTAL IMPLANTOLOGY 1 10. DENTAL RADIOLOGY 1	30	

3.2. Obligation of doctoral candidates in the second year

1. Submission of the topic of the doctoral dissertation (project) and public discussion.
2. Extracurricular scientific work in the field of doctoral dissertation (at least 30)
3. Work on the preparation and defense of a doctoral dissertation:

a) Preparation and writing of a doctoral dissertation project (15 ECTS)
b) Practical work on the material of the doctoral dissertation (15 ECTS)

<table>
<tr><th>YEAR OF STUDY</th><th colspan="2">PLAN</th><th>ECTS</th><th>TOTAL</th></tr>
<tr><td rowspan="3">II YEAR OF STUDY (III AND IV SEMESTAR</td><td colspan="2">1. Elective teaching activity
1. MORPHOLOGY OF TEETH WITH DENTAL ANTHROPOLOGY AND FORENSICS 2
2. DENTAL PATHOLOGY WITH ENDODONTICS 2
3. DENTAL PROSTHETICS WITH DENTAL IMPLANTOLOGY 2
4. ORAL MEDICINE AND PERIODONTOLOGY 2
5. PREVENTIVE DENTISTRY AND PEDODONTICS 2
6. ORTHODONTICS 2
7. ORAL SURGERY WITH DENTAL IMPLANTOLOGY 2
8. MAXILLOFACIAL SURGERY 2
9. DENTAL IMPLANTOLOGY 2
10. DENTAL RADIOLOGY 2</td><td>30</td><td rowspan="3">60</td></tr>
<tr><td>2. Scientific and research work</td><td>Code: SF DS NIR 211E</td><td>10</td></tr>
<tr><td>3. Work on the preparation of a doctoral dissertation</td><td>Code: SF DS RDD 212E</td><td>20</td></tr>
</table>

3.3. Obligations of doctoral candidates in third year

1. Extracurricular scientific paper in the field of doctoral dissertation (at least 15)
2. Work on the preparation and defense of the d octoral dissertation:
   a. Practical work on the material of the doctoral dissertation (15 ECTS)
   b. Writing the final version of the doctoral dissertation (30 ECTS)
3. Application for assessment and evaluation of the finished doctoral thesis.

YEAR OF STUDY	PLAN		ECTS	UKUPNO
III YEAR (V AND VI SEMESTER)	1. Scientific and research work	Code: SF DS NIR 31E	30	60
	2. Writing the final version of the doctoral dissertation	Code: SF DS IDD 32E	30	

4. DOCTORAL STUDY CURRICULUM

I SEMESTER

Subject name	Teaching				ECTS
	Lectures	Seminars	Exercises	Total	
METHODOLOGY OF SCIENTIFIC AND RESEARCH WORK	36	3	6	45	7,5
EPIDEMIOLOGY METHODS AND BIOSTATICS IN DENTAL SCIENCE AND PRACTICE	30	5	25	60	11
BIOLOGICAL BASIS OF OROFACIAL SYSTEM	36	3	6	45	7,5
PUBLISHING IN BIOMEDICAL SCIENCES	24	6	0	30	4
Total	**126**	**17**	**37**	**180**	**30**

II SEMESTER

Subject name	Teaching				ECTS
	Lectures	Seminars	Guided practicals	Total	
MORPHOLOGY OF TEETH WITH DENTAL ANTHROPOLOGY AND FORENSICS 1	16	2	12	30	6
DENTAL PATHOLOGY WITH ENDODONTICS 1	20	3	17	40	8
DENTAL PROSTHETICS WITH DENTAL IMPLANTOLOGY 1	20	3	17	40	8
ORAL MEDICINE AND PERIODONTOLOGY 1	20	3	17	40	8
PREVENTIVE DENTISTRY AND PEDODONTICS 1	20	3	17	40	8
ORTHODONTICS 1	20	3	17	40	8
ORAL SURGERY WITH DENTAL IMPLANTOLOGY 1	20	3	17	40	8
MAXILLOFACIAL SURGERY 1	20	3	17	40	8
DENTAL IMPLANTOLOGY 1	16	2	12	30	6
DENTAL RADIOLOGY 1	16	2	12	30	6

III SEMESTER

Subject name	Teaching				ECTS
	Lectures	Seminars	Guided practicals	Total	
MORPHOLOGY OF TEETH WITH DENTAL ANTHROPOLOGY AND FORENSICS 2	20	5	20	45	10
DENTAL PATHOLOGY WITH ENDODONTICS 2	20	5	20	45	10
DENTAL PROSTHETICS WITH DENTAL IMPLANTOLOGY 2	20	5	20	45	10
ORAL MEDICINE AND PERIODONTOLOGY 2	20	5	20	45	10
PREVENTIVE DENTISTRY AND PEDODONTICS 2	20	5	20	45	10
ORTHODONTICS 2	20	5	20	45	10
ORAL SURGERY WITH DENTAL IMPLANTOLOGY 2	20	5	20	45	10
MAXILLOFACIAL SURGERY 1	20	5	20	45	10
DENTAL IMPLANTOLOGY 2	20	5	20	45	10
DENTAL RADIOLOGY 2	20	5	20	45	10

<table>
<tr><td>Item code:
SF DS MP 11E</td><td colspan="3">Course Title: RESEARCH METHODOLOGY</td></tr>
<tr><td>Cycle: III</td><td>Year: I</td><td>Semester: I</td><td>Number of ECTS credits: 7,5</td></tr>
<tr><td colspan="2">Status: obligatory</td><td colspan="2">Total number of hours: 45
Optionally develop the distribution of hours by type:
Lectures: 36
Exercises: 6
Essays: 3</td></tr>
<tr><td colspan="2">Teaching participants:</td><td colspan="2">Teachers and associates selected in the field to which the subject belongs / subject [do not enter names in this section. Leave the wording as indicated in this section]</td></tr>
<tr><td colspan="2">Prerequisite for enrollment:</td><td colspan="2"></td></tr>
<tr><td colspan="2">Aim (objectives) of the course:</td><td colspan="2">- Adequately search literature, scientific publications, databases and make critical assessments of research areas
- Choose the appropriate type of research depending on the issues they want to research
- Correctly write a scientific research paper

To provide students with basic and new knowledge in science. But also basic knowledge about how and why and by what method to examine a problem.
Teach students to critically compare their results with the same or opposite results of scientific research.</td></tr>
<tr><td colspan="2">Thematic units:</td><td colspan="2">Lecture contents / hours
1. Introduction to the research methodology 2
2. Characteristics of research and why should we do researches 3
3. Basic types of research (observational research) 3
4. Basic types of research (experimental research) 3
5. Meta-analyses as a form of research 3
6. RCT- randomized studies 3
7. Cost-effectiveness and cost-benefit analysis 2
8. Ethical aspects of scientific research methodology 3
9. Plagiarism - significance and how it is defined 3
10. Plagiarism - ways of verification 2
11. IMRAD principle - the structure of scientific work 3
12. Proposal of the research project 3
13. International and domestic research projects, research networks 3

Exercises / hours
1. Determining the type of research 2
2. Determining the type of research by reviewing the literature 2
3. Software for plagiarism 2

Essays / hours</td></tr>
</table>

	1. Essay 1 - Preparation of scientific paper/announcements and publication at a congress or journal 2. Essay 2 - Preparation of scientific paper/announcements and publication at a congress or journal 3. Essay 3 -Preparation of scientific paper/announcements and publication at a congress or journal
Learning outcomes:	The student will be able to: - Adequate literature search, database - Make a synthesis and analysis of previous research from a particular field of research - Interprets the results of meta-analysis and review papers - Ethical approaches to the preparation of scientific work - Get acquainted with the consequences of plagiarism
Teaching methods:	Lectures, seminars, writing a project or scientific work.
Assessment methods with assessment structure:	
Literature:	1. Phillips EM, Pugh D. How to Get a PhD: A Handbook for Students and Supervisors. 4th edt. Open University Press McGraw Hill, England, 2006 2. Marušić M. Introduction to scientific work in medicine (3rd updated and supplemented edition). Zagreb, Medicinska naklada, 2004 – Croatian language edition

Item code: **SF DS MP 12E**	**Course Title: EPIDEMIOLOGICAL METHODS AND BIOSTATISTICS IN DENTAL SCIENCES AND PRACTICE**		
Cycle: III	**Year: I**	**Semester: I**	**Number of ECTS credits:** 11
Status: obligatory		**Total number of hours: 60** Optionally develop the distribution of hours by type: Lectures: **30** Exercises: **25** Essays: **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Prerequisite for enrollment:			
Aim (objectives) of the course:	This course covers the following topics: 1. Methods of data collection in dental research with basics of descriptive biostatistics 2. Establishing research aims and hypotheses in quantitative dental research, with types of data distribution 3. Measures of disease occurrence and association; Sampling errors in analytical studies (bias and confounding) 4. Univariant data analysis 5. Bivariant data analysis – design, analysis, and application of epidemiological methods in dental care; Design and analysis of screening in dentistry		

	6. Inferential biostatistics (statistical inference based on examples in dentistry), regression analysis
Thematic units:	Lecture contents / hours 1. Methods of data collection in dental research with basics of descriptive biostatistics 4 2. Establishing research aims and hypotheses in quantitative dental research, with types of data distribution 2 3. Measures of disease occurrence and association 4. Sampling errors in analytical studies (bias and confounding) 4 5. Univariant data analysis 4 6. Bivariant data analysis – design, analysis, and application of epidemiological methods in dental care; Design and analysis of screening in dentistry 8 7. Inferential biostatistics (statistical inference based on examples in dentistry), regression analysis 6 **Practical work / hours** 1. Methods of data collection in dental research with questionnaire design – practical applications based on examples from dental research Sampling methods (same-probability and non-probability samples), defining appropriate sample size in dental research Defining variables, grouping and sorting data with basic principles of constructing graphs and data visualization Calculating measures of central tendency and measures of variability from data collected in dental research 6 2. Types of data distribution – examples of normal distribution and t-distribution in quantitative dental research Defining research aims and hypotheses, one-sided and two-sided testing on practical examples based in dental research 2 3. Calculation of measures of disease occurrence along with measures of association in examples based in dental research through appropriate use of statistical software 3 4. Univariant analysis of collected data in dental research with application of statistical software 2 5. Design and analysis of descriptive epidemiological studies – examples of case-studies/case-series and cross-sectional studies in dental research Design of analytical epidemiological studies (case-control and cohort studies), with calculation of appropriate measures of association. Bias and confounding with methods of stratification based on examples from dental research

	Practical applications of calculating measures of diagnostic accuracy in diagnostic screening tests, based on examples from dental research 6 6. Basic concepts from probability theory with examples from dental research Setting statistical research hypotheses and defining level of significance and power based on examples from dental research Choosing appropriate statistical test and defining theoretical probability distributions based on data collected from dental practice. Examples of parametric and non-parametric statistical tests with practical examples from dental research – applications in statistical software Regression analysis in examples from dental research 6 **Essays** 1. How to choose the appropriate epidemiological method/study design? 2. Influence of bias, confounding, and relationships between variables in drawing conclusions on causality 3. From associations to causality: Inference in epidemiological studies 4. Contemporary means of presenting biomedical and dental research findings 5. When and why is logistic regression used in research?
Learning outcomes:	Upon completion of this course, student will improve their knowledge, understanding and attitudes towards: • collection and organization of data, design, and analysis of epidemiological studies in dentistry, and use of continuous, binary, polychotomic data with focus on examples in dental care and research, with different types of variables (continuous and categorical) • appropriate use of statistical software applications in building models and graphs, along with other types of statistical analyses • univariant and bivariant data analysis specifics of application in methods of statistical reasoning.
Teaching methods:	• all classes are conducted interactively • lectures are based on the "sandwich" method: theoretical basics with examples from practice • exercises are in small groups, with examples from practice and with appropriate epidemiological and statistical programs • the maximum group for the exercises is 8 students (if there are more, they will be divided into two groups)
Assessment methods with assessment structure:	Final knowledge assessment is based on: • Active participation in the course (10%) • Independent seminar assignment in the form of a project with consultations with course professors and teaching assistants (50%) • Written final exam, designed with two thirds MCQ questions and one third essay questions (40%).
Literature:	**<u>Obligatory</u>**

	1. S. Čavaljuga, M. Čavaljuga. Biostatistika: Osnovni principi i metode. Medicinski fakultet Univerziteta u Sarajevu, 2009. 2. S. Čavaljuga, E. Ademović, L. Džananović, A. Jamakosmanović, Dž. A. Jesenković. Biostatistics – Theoretical fundamentals and practical examples, Faculty of Medicine University of Sarajevo, 2022. 3. D. Essex-Sorlie: Medical Biostatistics and Epidemiology. Appleton & Lange 1995. **Additional** 1. L. Gordis. Epidemiology. Elsevier. (Any Edition after 2nd) 2. C. H. Hennekens, J. E. Burring, S. L. Mayrent (Ed). Epidemiology in Medicine. Little, Brown and Co Boston/Toronto. 1987. 3. H. Harris and G. Taylor. Medical Statistics Made Easy. Taylor & Francis 2004. 4. B.R. Kirkwood and J.A.C. Sterne. Essentials of Medical Statistics. Blackwell Science Ltd 2003. 5. B. Dawson and R.G. Trapp. Basic & Clinical Biostatistics. McGraw-Hill 2004.

Item code: **SF DS MP 13E**	**Course Title: BIOLOGICAL BASES OF OROFACIAL SYSTEM**		
Cycle: III	**Year: I**	**Semester: I**	**Number of ECTS credits:** 7,5
Status: obligatory		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures: **36** Exercises: **6** Seminars: **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Aim (objectives) of the course:	Acquiring advanced knowledge in the field of biology of the orofacial system. Understanding the genetic basis, normal growth and development, and deviations in the stomatognathic system.		
Thematic units:	**Lecture contents / hours** 1. Biomechanics of hard dental tissues 2 2. Biological potential of enamel remineralization. 1 3. Biological basis of hemodynamic processes in the pulp. 2		

	4. Epithelial-ectomesenchymal morphogenetic regulation of odontogenesis. 2 5. Origin, localization, function and potential role of undifferentiated mesenchymal cells of the dental organ in reparative dentistry. 2 6. Comparative biology and reparative potential of dental tissues. 2 7. Conservative and holistic concept of mineral imbalance of hard dental tissues. 1 8. Oral somatosensory systems. 2 9. Histological specificities and optical characteristics of healthy and pathologically changed dental tissues. 1 10. Biological aspects of oral and dental tissue aging. 2 11. Macroscopic and microscopic characteristics of periodontal tissues and different types of oral mucosa 2 12. Specific and non-specific defense mechanisms in the oral cavity (molecular aspect). 1 13. Genetic risk factors in periodontology. 1 14. Temporomandibular joint structure, role and function, and temporomandibular dysfunctions (Definition, etiology, signs and symptoms and therapy). 2 15. Reference positions of the mandible and basic movements. 2 16. Occlusion and articulation. 2 17. Genetic research in dentistry: - studies on twins - family studies - studies in the population 4 18. Characteristics of dento-oral tissues and specificities of the pulp-periodontal complex in children. 2 19. Mental and physical development of the child - implications for oral health and dental treatment. 1 20. Mechanisms and theories of tooth eruption and replacement. 2 **Exercises / hours** 1. Analysis, collection and evaluation of scientific data in prospective and retrospective studies in the rehabilitation of the orofacial system 1 2. Microscopic analysis of developmental and regressive changes in dental tissues 1 3. Deviations in dental organ development. 1 4. FEA in research on the biomechanics of dental tissues. 1 5. Pathohistological changes in the oral mucosa and periodontium 1

	6. Genetic aspect of characteristics of orofacial system 1 **Seminars** 1. Searching and analyzing recent literature by key words 2. Basic knowledge of orofacial biology in the context of scientific research 3. Influence of systemic diseases on biology of orofacial region
Learning outcomes:	Training doctoral students to think independently and find sources for research in orofacial genetics, development, histology, anatomy, and physiology of stomatognathic system. A more complete understanding of the mechanisms of maintaining the integrity of orofacial tissues and the process of reparation and regeneration.
Teaching methods:	Lectures Practical exercises Seminars Consultations
Assessment methods with assessment structure:	Regular attendance and activities at lectures constitute 35% of the grade; Regular attendance and activities at practical classes constitute 15% of the grade; Seminars constitute 10% of the grade; The final exam constitutes 40% of the grade. After completing the module, the doctoral student can have a maximum of 100 points, and the grading scale is as follows: <55 points - mark 5 55-64 points - mark 6 65-74 points - mark 7 75-84 points - mark 8 85-94 points - mark 9 95-100 points – mark 10
Literature:	1. Avery JK, Chiego DJ. Osnovi oralne histologije i embriologije, DataStatus, Beograd 2011. 2. Berkovitz BKB, Holland GR, Moxham BJ. Oral anatomy, histology and embryology, Mosby, St Louis, 2002. 3. Garant PR. Oral Cells and Tissues. Quintessence Publishing, 2003.

	4. Roberson TM, Heymann HO, Swift EJ, editors. Sturdevant's Art and Science of Operative Dentistry, Mosby, St. Louis, 2002. 5. Bergenholtz G, Horsted-Bindslev P, Reit C. Endodontologija. Orion art, Beograd, 2011 6. Mjör I. Biologija pulpe i dentina u restaurativnoj stomatologiji, Data Status, Beograd, 2008 7. Škrinjarić I. Orofacijalna genetika. Školska knjiga, Zagreb, 2006. 8. Mastham MKM. Textbook of Human Oral Embryology, Anatomy, Physiology, Histology and Tooth Morphology. JP Medical Ltd, 2010.

Item code: **SF DS MP 14E**	**Course Title: PUBLISHING IN BIOMEDICAL SCIENCES**		
Cycle: III	**Year: I**	**Semester: I**	**Number of ECTS credits:** 4
Status: obligatory		**Total number of hours: 30** Optionally develop the distribution of hours by type: Lectures **24** Exercises **0** Seminar **6**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Prerequisite for enrollment:			
Aim (objectives) of the course:	Acquaint the student with the basic principles of scientific communication and the need to publish the results of scientific research. To enable the student to independently publish the results of work in different types of publications. Acquisition of necessary knowledge and skills for independent writing and presentation of research results. Acquaint students with the basics of public presentation of work at professional and scientific gatherings. To train the student for critical reflection and analysis of scientific research works. Acquaint students with the principles of publishing, reviewing and editing journals in dentistry, with special emphasis on the ethical principles of publishing		
Thematic units:	**Lectures content/hours** 1. Designing scientific work. The structure of the scientific article, the importance of individual parts of the work. 1 2. Citation of literature in scientific work. Quotes and quote analysis. Uniform requirements for manuscript submission to scientific journals (Vancouver Rules). 1 3. Types of scientific publications. 1		

	4. Authors and authorship. Scientific cooperation (co-authorship). Copyright and their protection. Scientific truth and intellectual honesty in scientific research work. Professionalism. Responsibility of the researcher. 2 5. Public presentation and defense of graduate thesis Oral presentation of work. Poster presentation. 2 6. Magazines. Physical form of the magazine - number of articles and number of pages. Magazine publishers. Language of journal articles. Types of articles. Importance of instructions for authors. 1 7. Journal Citation Report (JCR). Reverberation factor. 1 8. Bibliographic databases. ISI's bibliographic databases: Citations indexes SCI, SSCI, Current Contents and ISI Proceedings. Secondary sources of information. 1 9. Intellectual dishonesty in science. Plagiarism 1 10. Publishing process. Ethics of publication. Magazine publishers. The role of the editor and editorial board of the journal. 1 11. Case presentation - the importance of correct conception of the title and writing an introduction from the domain of oral medicine and periodontology 1 12. Case presentation - writing a presentation of a clinical case with relevant findings (microbiological, PH findings, laboratory diagnostics) from the domain of oral medicine and periodontology 1 13. Case report - a form of scientific and professional work 1 14. Writing and publishing work in the field of dental prosthetics with dental implantology 1 15. Preparation of a project of scientific work with the aim of obtaining approval for scientific work research 1 16. Proper collection of scientific research data and writing of a scientific work 1 17. Publication of scientific work 1 18. Review paper, systematic literature review and meta analysis 1 19. Presentation at a scientific meeting, basic types of presentation, differences between individual types of presentation, characteristics of a successful presentation. 1 20. Searching scientific literature, principles of evaluation of publications, selection of literature for citation, choice of journal for publication. 1 21. The style of writing a scientific work and the specificity of expression,the most common mistakes in writing a work for publication. 1
Learning outcomes:	After the class, the student will be able to independently publish the results of scientific research work in various types of publications, will be familiar with the process of publishing scientific research work in dentistry, will be familiar with the elements of public presentation of works at professional and scientific

	gatherings, will be able to read independently, writing and critical thinking of scientific research work.
Teaching methods:	▪ Lectures ▪ Seminars ▪ Consultations
Assessment methods with assessment structure:	Regular attendance and activities at lectures make up 25% of the grade; seminars make up 25% of the grade; the final exam makes up 50% of the grade. After completing the module, the doctoral student can have a maximum of 100 points. To pass the final exam, the student should have at least 55% of the points achieved during the semester based on attendance and activities in class and seminar work. The rating scale is as follows: <55 points - grade 5 55-64 points - grade 6 65-74 points - grade 7 75-84 points - grade 8 85-94 points - grade 9 95-100 points - grade 10
Literature:	1. Jokić M. Bibliometrijski aspekti vrednovanja znanstvenog rada.Sveučilišna knjiţara, Zagreb 2005. 2. V Silobrčić. Kako sastaviti, ocijeniti i objaviti znanstveno djelo? 6 dopunjeno izdanje, 2003 3. J. Peat, E. Elliott, L. Baur, V. Keena. Scientific Writing. London: BMJ Books, 2002. 4. T. Greenhalgh. How to Read a Paper. London: BMJ Books, 2001. 5. GM Hall. How to Write a Paper. London: BMJ Books, 1998. 6. GM Hall. How to Present at meetings. London: BMJ Books, 2001. 7. JĐ Savić. Kako napisati, objaviti i vrednovati naučno delo u biomedicini. Beograd: Kultura, 1996. 8. RA Day. How to Write and Publish a Scientific Papaer. Phoenix: Oryx, 1998. 9. JĐ Savić. Kako stvoriti naučno delo u biomedicini. Beograd: Kultura, 1999. 10. Todorović Lj. Vučković- Dekić Lj.(urednici). Komunikacija u biomedicinskim naukama. Medicinski fakultet Univerziteta u Kragujevcu, M-print Beograd, Kragujevac 2008.

II SEMESTER

Item code: **SF DS GP 11E**	**Course Title: DENTAL MORPHOLOGY WITH DENTAL ANTHROPOLOGY AND FORENSICS 1**		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 6
Status: elective		**Total number of hours: 30** Optionally develop the distribution of hours by type: Lectures **16** Exercises **12** Seminar **2**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Challenges and opportunities of anthropological and forensic research in dentistry 1 2. Relationship between form and function of orofacial structures 1 3. Anthropological aspect of morphology, dimensions and variations of teeth 1 4. Functional occlusal morphology (supporting cusps and guiding cusps, marginal ridges, fissure type V, U, I, IK, Y) 1 5. Topographical anatomy of the endodontic space 1 6. Other aspects of the functional anatomy of teeth 1 7. Comparative microanatomy of dental tissues 1 8. Optical properties of hard dental tissues 1 9. Regressive changes in dental tissue (clinical and forensic aspects) 1 10. Non-carious lesions of hard dental tissues. Modern concept and new technologies in diagnosis and therapy 1 11. Classification of morphological characteristics on permanent dentition teeth - ASUDAS standard 1 12. Odontometry: Applicability of results obtained by odontometric methods 1		

	13. Classic morphometric methods and geometric morphometry in dentistry 1 14. Three-dimensional photogrammetry in forensic dentistry 1 15. Forensic and bioarchaeological characteristics of teeth (age, sex, race and individual characteristics) 1 16. Dental profiling and comparative odontography 1 **Exercises / hours** 1. Craniofacial anthropometry (anthropometric points, anthropometric indices) 1 2. Collection, interpretation and application of anthropometric measurements in population, clinical and forensic research) 1 3. Photogrammetry in dentistry (techniques, standardization of photographs, types of photographs) 1 4. Subjective and objective criteria for aesthetic evaluation of the dentofacial complex (analysis of dentodental, dentogingival, dentolabial and dentofacial complex in the photos) 1 5. Odontometry (methods on natural teeth, plaster models, photographs, using a microscope and radiographically) 1 6. Calibration of researcher and standardization of measurement criteria 1 7. Analysis of morphological characteristics of teeth according to the ASUDAS standard 1 8. Dental anomalies (etiology, classification and diagnosis) 1 9. Anthropological analysis using radiography 1 10. Forensic analysis using radiography 1 11. Computer morphometric analyses 1 12. Comparative odontography 1

Item code:	**Course Title: DENTAL PATHOLOGY WITH ENDODONTICS 1**

SF DS GP 12E			
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 8
Status: elective		**Total number of hours: 40** Optionally develop the distribution of hours by type: Lectures **20** Exercises **17** Seminar **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Non-carious damage to hard dental tissues 2 2. Composite materials 2 3. Minimally invasive therapy of hard dental tissues 2 4. Possibilities of aesthetic treatment in restorative dentistry - teeth whitening 2 5. Internal and external resorption 2 6. Ultrasound in endodontics 2 7. Rotary endodontic techniques 2 8. Clinical and radiological guidelines in the interpretation of the endodontic space 2 9. Immunological aspect of pulp-periapical changes 2 10. Biocompatibility of endodontic materials 2 Exercises / hours **Exercises /hours** 1. Significance and use of the apex-locator in determining the working length of root canals. 2 2. Root canal treatment techniques. 2 3. Root canal obturation techniques (standard and contemporary). 2 4. Aesthetic composite restorations (minimally invasive techniques) 2 5. Indications and working principle of rc revision of inadequately filled root canals. 2 6. Endodontic-periodontal problems and therapy options. 2 7. Restoration of an endodontically treated tooth. 2 8. Specificities of caries therapy and endodontic therapy in patients of the older patients 2 9. Analgesia in endodontics 2		

Item code: SF DS GP 13E	Course Title: DENTAL PROSTHODONTICS WITH DENTAL IMPLANTOLOGY 1		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 8
Status: elective		**Total number of hours: 40** Optionally develop the distribution of hours by type: Lectures **20** Exercises **17** Seminar **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1.The field of fixed prosthetics research. Indications, types of replacements (crowns, bridges, posts and cores, veneers), contraindications, function, phonation, esthetics, social-psychological aspects of fixed prosthetic therapy. 1 2. Research within fixed prosthetics works. Investigation on crowns (parameters - caries, retraction, periodontal condition - indices), research on post extensions (X-rays), research on dental bridges, researches on soft tissues. 1 3. The reality of conditions found in patients' mouths within fixed prosthetic therapy. Biological processes – changes on the abutment tooth, changes on the gingiva, changes on the supporting structure and changes on the alveolar bones. 1 4. Patient's habits - good habits and bad work. Possibilities (professional and technological - machines and materials) 1 5. Examination of the physical properties of dental gypsum - experimental laboratory study – part 1. Setting problems, hypotheses and research objectives. Physical properties of the material (dimensional stability, reproduction of details and compressive resistance). Application of ISO standards in research. Planning experimental laboratory research. 1 6. Examination of the physical properties of dental gypsum - experimental laboratory study - part 2. Preparation of laboratory protocol. Performing experimental laboratory research. Analysis of research results. Drawing conclusions. 1 7. The importance of bone density assessment in fixed prosthetic therapy. Influence of local and systemic factors on alveolar bone density, methods for determining bone density with special reference to computerized densitometry. 1 8. Clinical evaluation of fixed prosthetic works		

	The influence of fixed prosthetic works on periodontal health, examination of periodontal indices and analysis of X-ray images in fixed prosthetic therapy. 1 9. Experimental laboratory research of cements for definitive cementation in fixed prosthetics. Dental cements on the basis of polymers. Acid-base cements 1 10. Biomechanics in fixed prosthetics. Biomechanics of abutment teeth. Masticatory forces as an important factor in biomechanical events. 1 11. Biomorphological methods of research in dental prosthetics. Morphometric 3D analysis of the craniofacial system. Skull as an anthropomorphic model. Coordinates-anthropomorphic model and positioning in Euclidean space 3 12. Occlusion and articulation: maximum intercuspidation, centric relation, jaw relations, pathological changes 1 13. Temporomandibular joint: functional anatomy of all parts, movements of the mandible, movements in the joint, physiology of mastication, X-ray of the temporomandibular joint (with and without dysfunctions) 2 14. A scientific approach to the pathophysiology, diagnosis and treatment of pain in the head and neck area. Neurological causes of chewing and swallowing disorders 2 15. Stomatognathic system (SGS): anatomy and physiology of all parts (with special reference to the musculature) 2 **Exercises / hours** 1. Assessment of bone density using computerized densitometry 1 2. Examination of periodontal health in fixed prosthetic works – significant periodontal indices 1 3. Research of physical and chemical properties of cement according to ISO standards 1 4. Laboratory tests of the mechanical properties of materials using a tensile testing machine 1 5. Planning experimental laboratory research 1 6. Preparation of the laboratory protocol 1 7. Deliberative discussions on the taught topic: The field of fixed prosthetics research.

	Indications, types of replacements (crowns, bridges, posts and cores, veneers), contraindications, function, phonation, esthetics, social-psychological aspects of fixed prosthetic therapy. 1 8. Deliberative discussions on the taught topic: Research within fixed prosthetic works. Investigation on crowns (parameters - caries, retraction, periodontal condition - indices), research on post extensions (X-rays), research on dental bridges, research on soft tissues. 1 9. Deliberative discussions on the taught topic: The reality of conditions found in patients' mouths within fixed prosthetic therapy. Biological processes – changes on the abutment tooth, changes on the gingiva, changes on the supporting structure and changes on the alveolar bones. 1 10. Deliberative discussions on the taught topic: Patient's habits - good habits and bad work. Possibilities (professional and technological - machines and materials) 1 11. Analysis of the skull and finding anthropomorphic points 1 12. 3D CTCB device; Articulators 1 13. Model; jaw relations and analysis on models and patients. 1 14. Analysis on the patient and analysis of radiographs of the temporomandibular joint 1 15. Presentation of patients with pain caused by temporomandibular dysfunctions 1 16. Presentation of patients who have neurological disorders of other etiology; differential diagnostic approach 1 17. Analysis of all parts of the stomatognathic system with special reference to the musculature and dysfunctions 1

<table>
<tr><td>Item code:
SF DS GP 14E</td><td colspan="3">Course Title: ORAL MEDICINE AND PERIODONTOLOGY 1</td></tr>
<tr><td>Cycle: III</td><td>Year: I</td><td>Semester: II</td><td>Number of ECTS credits:
8</td></tr>
<tr><td colspan="2">Status: elective</td><td colspan="2">Total number of hours: 40
Optionally develop the distribution of hours by type:
Lectures 20
Exercises 17
Seminar 3</td></tr>
<tr><td>Teaching participants:</td><td colspan="3">Teachers and associates selected in the field to which the subject belongs / subject [do not enter names in this section. Leave the wording as indicated in this section]</td></tr>
<tr><td>Thematic units:</td><td colspan="3">Lectures content/hours

1. Morphology and pathology of the biofilm 2
2. Immunopathogenesis of periodontal diseases 2
3. Oral pathological changes in the gingiva and the periodontium 2
4. Clinical and X-ray evaluation of periodontitis 2
5. Non-invasive methods in periodontology 2
6. The significance of clinical signs and symptoms in oral disease diagnosis 2
7. The role of saliva in pathogenesis of oral diseases 2
8. Oral infections in immunodeficient patients 2
9. Oral diseases as results of systemic disorders 2
10. Colour changes in the oral mucosa 2

Exercises / hours
1. Basic diagnostic and therapeutic procedures in periodontology 2
2. Molecular biological tests in the diagnostics of periodontal diseases 1
3. Initial periodontal therapy with X-ray analysis 2
4. Pharmacologically assisted periodontal therapy 1
5. Clinical assessment of the formation of epithelial attachment after hard and soft tissue treatment in the periodontal pocket 1
6. X-ray image analysis in the risk assessment in focal diseases 1
7. Differential diagnosis of pathological changes in the oral mucosa 1
8. Oral tests and microbiological test results in the diagnostics of oral diseases 1
9. Application of specific protocols of dental treatments in patients with diseases of individual organ systems 1
10. Clinical evaluation of the most common changes in the oral mucosa in elderly persons 1
11. The significance of saliva analysis in the early detection of the diseases of the periodontium 1</td></tr>
</table>

	12. Quantitative and qualitative saliva analysis in oral diseases 1 13. Differential diagnosis of light lesions in the oral mucosa 1 14. Differential diagnosis of dark lesions in the oral mucosa 1 15. Differential diagnosis of volume increase of soft tissues 1

Item code: **SF DS GP 15E**	**Course Title: PREVENTIVE DENTISTRY AND PEDODONTICS 1**		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 8
Status: elective		**Total number of hours: 40** Optionally develop the distribution of hours by type: Lectures **20** Exercises **17** Seminar **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Writing a doctoral thesis through a clinical topic in the field of pedodontics 2 2. Restorative treatment with composites - advantages and disadvantages 2 3. Oral health research and monitoring methodology 2 4. Modern diagnostic procedures in the detection of early carious lesions (possibilities and limitations) 2 5. Specificities and possibilities of research according to age within the children's population 2 6. Investigation of the frequency and etiology of periodontal disease in children. Defining risk and researching risk factors for disease periodontal disease in children. 2 7. Evaluation of clinical parameters of structural changes in teeth 2 8. Clinical consequences of structural anomalies on the teeth 2 9. Microbiological aspect of caries in deciduous and young permanent dentition 2 10. Epidemiology and risk factors of severe form early childhood caries - guidelines for further research 2 **Exercises / hours** 1. Assessment of oral health status in epidemiological research in the pediatric population. 1 2. Oral health epidemiology. 1 3. Calibration of researchers in epidemiological oral health evaluation studies. 1		

	4. Survey as a scientific research method. 1 5. Applications of the evidence-based dentistry principles to Scientific research planning. 1 6. An overview of caries risk assessment methods in pediatric patients. 1 7. An overview of periodontal risk assessment methods in pediatric patients. 1 8. Assessment of the effectiveness of therapeutic and prophylactic agents in initial carious lesions treatment. 1 9. Designing preventive oral health programs for preschool and school children, pregnant and nursing women. 1 10. Methods and means of oral health promotion and professional, community and individual motivation for oral health maintenance 1 11. Aesthetic aspects of dental trauma restorations in children 1 12. Minimally invasive therapy - a modern aspect of the caries management 1 13. Physico-chemical properties of restorative materials - clinical aspect 1 14. Analysis of the frequency of oral manifestations of developmental anomalies and syndromes in children 1 15. Analysis of clinical parameters of enamel opacity 1 16. Indexes for registration of enamel developmental defects 1 17. Analysis of microbiological caries research 1

Item code: **SF DS GP 16E**	**Course Title: ORTHODONTICS 1**		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 8
Status: elective		**Total number of hours: 40** Optionally develop the distribution of hours by type: Lectures **20** Exercises **17** Seminar **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Growth and development of the dentofacial complex and research area 6 2. Malocclusions and assessment of orthodontic treatment need 6 3. Experimental research in orthodontics 6 4. Presentation of orthodontic scientific papers 2 **Exercises / hours** 1. The study of growth and development 2		

	2. Orthodontic aspects of primary dentition 3 3. Orthodontic aspects of mixed dentition 3 4. Orthodontic aspects of permanent dentition 3 5. Orthodontic aspects of occlusion in adults 2 6. Testing of adhesive materials, attachments, microbiological analyses 4

Item code: SF DS GP 17E	Course Title: ORAL SURGERY WITH DENTAL IMPLANTOLOGY 1		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 8
Status: elective		**Total number of hours: 40** Optionally develop the distribution of hours by type: Lectures **20** Exercises **17** Seminar **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Inadequate effect of local anesthetic in practice 1 2. Alternative techniques of local anesthesia 1 3. Retrograde root canal sealing in apicotomy 1 4. Histological substrate of cystic formations in bone 1 5. Diagnostics and differential diagnosis of cystic formations. 1 6. Modern diagnostic approaches to pathological lesions of the maxillary sinus 1 7. Surgical orthodontic treatments of retained and impacted teeth 1 8. Diagnostics and planning of surgical orthodontic treatments of retained and impacted teeth 1 9. Application of ultrasonic surgery in surgical treatment of impacted teeth 1 10. Teeth avulsions 1 11. Modalities of healing of avulsed teeth - clinical and histological aspects 1 12. Experimental dog model in the study of dentoalveolar trauma 1 13. Prognoses of replanted teeth and final outcomes 1 14. Dental implantology in the aesthetic region - specifics and challenges 1 15. Principles of alveolar preservation after tooth extraction 1 16. Installation of implants in unfavorable conditions 1 17. Dental treatment of medically compromised patients 1 18. Dental treatment of oncological patients 1 19. Dental treatment of patients with transmissible diseases 1 20. Contemporary possibilities of X-ray and CT diagnostics in oral-surgical practice 1 **Exercises / hours** 1. Piezo surgery 2 2. Application of PRF in oral surgery 2 3. Tooth extraction techniques of patients planned for implant therapy 2 4. Techniques of intraosseous anesthesia 2		

	5. Oral surgical procedures in medically compromised patients 2 6. HIV patients in oral surgery practice 2 7. Surgical-orthodontic treatment of patients with retained and impacted teeth 2 8. Specifics of apicotomies of teeth supporting fixed prosthetic works 2 9. A modern approach to the therapy of impacted and retained teeth 1 10. Complications during and after surgical extraction of impacted and retained teeth 2 11. Prosthetic rehabilitation with dental implants after treatment of odontogenic cysts and tumors 2 12. Importance of dental follicle and immunohistochemistry in oral surgery 1

Item code: **SF DS GP 18E**	**Course Title: MAXILLOFACIAL SURGERY 1**		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 8
Status: elective		**Total number of hours: 40** Optionally develop the distribution of hours by type: Lectures **20** Exercises **17** Seminar **3**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Infection of the deep spaces of the head and neck in general 2 2. Specific head and neck inflammations 2 3. Infections of the bony tissue of the viscerocranium 2 4. Fractures of bony structures of the visceral skull and soft tissue injuries 2 5. Oboljenja kranijalnih nerava 2 6. Diseases of the temporomandibular joint 2 7. Diseases of the salivary glands 2 8. Tumors of the maxillofacial region 2 9. Congenital anomalies of soft tissues and bony deformities of the maxillofacial region 2 10. Reconstructive procedures in maxillofacial surgery and aesthetic surgery faces 2 **Exercises / hours** 1. Analysis of basic diagnostic procedures in head and neck surgery, MRI and CT, EHO, etc. 2		

	2. Clinical examinations/inspection-directoscopy, indirectoscopy, palpation, percussion, etc. 1 3. Forming a medical history for a hospital patient 2 4. Less invasive diagnostic procedures in MFH surgery 1 5. Minor interventional surgical procedures in outpatient MFH surgery 1 6. Implementation in the operating room 1 7. Monitoring of local and general status in the early postoperative period 1 8. Conducting video conferences in the operating room 1 9. Conducting video conferences in the operating room 1 10. Conducting video conferences in the operating room 1 11. Conducting video conferences in the operating room 1 12. Conducting video conferences in the operating room 1 13. Implementation in the operating room 1 14. Implementation in the operating room 1 15. Implementation in the operating room 1

Item code: **SF DS GP 19E**	**Course Title: DENTAL IMPLANTOLOGY 1**		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 6
Status: elective		**Total number of hours: 30** Optionally develop the distribution of hours by type: Lectures **16** Exercises **12** Seminar **2**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Bioengineering in dental implantology. Explain the structure and properties of the materials from which dental implants are made and prosthetic components for dental implantology. 2. Application and proper selection of radiological methods in dental implantology. Present the fundamental radiological methods used to diagnose and planning in dental implantology. During the lecture it will be explained in detail the use of Sidex and Galileos implant planning software.		

	3. Treatment planning and surgical procedures in dental implantology. Explaining the basic planning postulates in dental implantology with reference to anatomical limits and physiology of the bone. Giving "step by step" presentation of surgical procedures in dental implantology. 4. Peri-implant histology.The lecture will bring closer the relationship between the implant and the surrounding bone tissue and biological changes that occur in bone tissue after implant insertion. 5. Case report in dental implantology. Through the case report the correct selection of patients, planning in dental implantology, presentation of the latest strategic surgical procedures of implantation, recommendations to reduce postoperative complications will be presented. Each case will be analyzed and discussed in detail. 6. Prosthodontics in dental implantology. During lectures, doctoral students will be given detailed didactic and clinical instructions regarding techniques and procedures aimed at successful and complete rehabilitation of patients with prosthetic superstructures on dental implants. Advanced clinical and laboratory procedures with an accent on components for the restoration of partially and completely edentulous patients will be presented. **Exercises / hours** 1. Introducing different brands of dental implants on the market advantages and disadvantages 1 2. Selection of patients for implantation 1 3. The use of X-rays, RVG images and OPG images in implantology, analysis of cases 1 4. The use of the 3D CTCB device in implantology and the analysis of cases using Sidex and Galileos implant planning software 1 5. Planning of the implant placement in the upper jaw with reference to anatomical limits and bone physiology 1 6. Surgical procedures of sinus lift surgery 1 7. Planning of the implant placement in the lower jaw with reference to anatomical limits and bone physiology 1 8. Presentation of implant placement in the upper jaw area of the frontal teeth 1 9. Presentation of implant placement in the upper jaw area of the posterior region 1 10. Presentation of implant placement in the lower jaw area of the frontal teeth 1 11. Presentation of implant placement in the lower jaw area of the posterior region 1 12. Presentation of the placement of the gingiva former after the opening of the implants1

	13. Selection of superstructures for certain cases 1 14. Presentation of prosthetic replacements on implants - missing one tooth 1 15. Presentation of prosthetic replacements on implants - missing of multiple teeth 1 16. Presentation of prosthetic replacements on implants - missing all teeth 1 17. Presentations of possible complications and failures in dental implantology 1

Item code: **SF DS GP 110E**	**Course Title: DENTAL RADIOLOGY 1**		
Cycle: III	**Year: I**	**Semester: II**	**Number of ECTS credits:** 6
Status: elective		**Total number of hours: 30** Optionally develop the distribution of hours by type: Lectures **16** Exercises **12** Seminar **2**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. The role and importance of radiological procedures in dentistry 2 2. Imaging methods in the diagnosis of diseases of the orofaciol region 2 3. Digital orthopantomgraphic method 2 4. Diagnosing diseases of the TM joint – radiographic methods 2 5. Diagnosing diseases of the TM joint – MR method 2 6. Diagnosing of diseases of the major salivary glands – possibilities of radiographic methods anf MR method 2 7. Imaging diagnosis of lessions in the soft tissue structures of the orofacial region2 8. X-ray image of the most common syndroms related to the orofacial region 2 **Exercises / hours** 1. The role of the dentist in performing certain radiographic and diagnostic procedures 2 2. Interpretation of images obtained by imaging methods 1 3. Defining indications for performing various diagnostic radiographs procedure 1		

	4. Basic principles of patient and staff protection during the performance of various radiographic procedures 2 5. Definition and critical review of indications for performing digital orthopantomography method 1 6. Principles of performing an examination using the MR method 1 7. Valorization of advantages and disadvantages of radiographic and digital methods 2 8. Comparative analysis of the results of radiographic and MR procedure in diagnosing diseases of the orofacial region 2

II YEAR OF STUDY

Item code: **SF DS GP 21E**	**Course Title: DENTAL MORPHOLOGY WITH DENTAL ANTHROPOLOGY AND FORENSICS 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Basic morphological-functional knowledge as a basis for research and clinical work 1 2. Palatoscopy - methodology and materials 1 3. Cheiloscopy - methodology and materials 1 4. Sexual dimorphism of deciduous and permanent teeth – anthropological and forensic significance 1 5. Sexual dimorphism of the maxilla and mandible 1 6. Age estimation by dental methods in children 1 7. Age estimation by dental methods in adults 1 8. Tribological concept of wear of hard dental tissues 1 9. 3D morphology of the cusp-ridge system 1 10. 3D morphology of the fissure system 1 11. 3D morphology of root canals 1 12. Paleoodontology - challenges and possibilities of paleoodontological research 1 13. Dental stem cells and tissue engineering of orofacial structures 1 14. Sources, isolation, cultivation and transfer of dental stem cells 1 15. Basics of the biotechnological concept in dentistry 1		

	16. Ultrastructure and nature of the connection of hard dental tissues of the permanent dentition and adhesive materials 1 17. Ultrastructure and nature of the bond between the hard dental tissues of the deciduous dentition and adhesive materials 1 18. Changes in the optical properties of hard dental tissues caused by demineralization 1 19. Models of dentine hypersensitivity 1 20. Development, maturation, regressive changes and bone taphonomy 1 **Exercises / hours** 1. Recording of specific characteristics of teeth and jaws important for forensic identification 1 2. Work on ASU DAS referent plaques 1 3. Comparative morphological analyses 1 4. Differences in analyzes on natural teeth. Studio models and photos 1 5. Recording and analysis of palatine ridges 1 6. Registration and analysis of lip prints 1 7. Work on extracted teeth - model preparation and microscopy 1 8. Dental wear classification systems 1 9. In vitro examination of the optical properties of hard dental tissues 1 10. Analysis of paleoodontological skeletal and dental remains 1 11. Visual and morphological techniques of dental age assessment 1 12. Radiological and histological techniques of dental age assessment 1 13. Anthropological methods of gender assessment using skull, jaw and TMJ analysis methods 1 14. Comparing AM and PM data 1 15. Writing an anthropological and forensic report 1 16. Radiological analyzes of jaw bones 1 17. Radiological methods of analysis of the root system (CBCT, radiovisiography) 1 18. Radiological methods of fissure system analysis 1 19. Computer programs in anthropological and forensic research 1 20. Experimental models of bite marks 1 **Seminars / hours** Seminar 1: Morphometry in practice Seminar 2: Comparison of patterns of variability in shape Seminar 3: Analysis of bite marks Seminar 4: Geometric morphometry Seminar 5: GWAS (Genome-Wide Association Studies) od dental caries

Literature:	1. Vuković A, Zukić S. Bajsman A, Selmanagić A. Osnovi morfologije zuba i dentalne antropologije, Stomatološki fakultet Univerziteta u Sarajevu, Sarajevo, 2012. 2. Berkovitz BKB, Holland GR, Moxham BJ. Oral anatomy, histology and embriology, Mosby, St Louis, 2002. 3. Garant PR. Oral Cells and Tissues. Qintessence Publishing, 2003. 4. White TD, Black MT, Folkens PA. Human Osteology, Third edition, Elsevier Academic Press, 2012. 5. Scott RG, Turner CG. The anthropology of modern human teeth – Dental morphology and its variation in recent human populations, Cambridge University Press, 2000. 6. Hillson S. Dental Anthropology, Cambridge University Press, 2002. 7. Škrinjarić I. Orofacijalna genetika. Školska knjiga, Zagreb, 2006. 8. Mastham MKM. Textbook of Human Oral Embriology, Anatomy, Physiology, Histology and Tooth Morphology. JP Medical Ltd, 2010. 9. Brkić H i sar. Forenzična stomatologija, Školska knjiga, Zagreb, 2000. 10. Ivanović A, Kalezić M. Evoluciona morfologija – teorijske postavke i geometrijska morfometrija, Biološki fakultet Univerziteta u Beogradu, 2013.

Item code: **SF DS GP 22E**	**Course Title: DENTAL PATHOLOGY WITH ENDODONTICS 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Diagnostic Terminology in Endodontics 2 2. Techniques for Posterior Composite Restorations 2 3. Shade Selection in Esthetic Dentistry 2 4. Adhesion and Bonding in Restorative Dentistry 2 5. The Concept of Monoblock in Endodontics 2 6. Role of Irrigants in Endodontics; The Influence of Irrigant Activation, Concentration, Advantages of Combination of Various Endodontic Irrigants 2		

	7. Endodontics in Systemically Compromised Patients 2 8. In Vitro Research Methodologies Used in Endodontics I 2 9. In Vitro Research Methodologies Used in Endodontics II 2 10. Role of Computer Assisted Technology in Restorative Dentistry and Endodontics 2 **Exercises / hours** 1. Use of Cone Beam Computed Tomography in Endodontics 3 2. Use of Ultrasonics in Endodontic Retreatment of Inadequately Treated Root Canal Systems 3 3. Contemporary Endodontic Obturation Techniques 3 4. Endodontic Management of Canal Calcification 3 5. Endodontic Systemic Medication 3 6. Specificity of Dental Tissue Sampling for Experimental Research 3 7. Electronic Databases in Dentistry Research Relevant to Restorative Dentistry and Endodontics 2

Item code: **SF DS GP 23E**	**Course Title: DENTAL PROSTHODONTICS WITH DENTAL IMPLANTOLOGY 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. How to write a doctoral dissertation in the field of fixed prosthetics from ideas to conclusions. Approach to writing the dissertation, tutorial with the mentor, choosing the field, defining the problem, insight into previous research in the chosen field, purpose of writing the chosen topic, scientific contribution, defining the title, introductory part, definition of objectives, definition of hypotheses, methodology, material, formation of samples, results, statistics, discussion, conclusions. 1		

	2. Scientific considerations in fixed prosthetics, choice of research models, in vivo, in vitro, on patients, parameters for measurement in the patient's mouth 1 3. Characteristics of materials (brittleness, rigidity, plasticity, hardness, strength, resilience). Resistance to impact. Hardnes of dental materials. Material loading by stretching, pressure, bending, shearing and torsion. Elasticity modulus.1 4. Ceramic systems in fixed prosthetics. Properties of feldspar ceramics. Properties of fluor-apatite ceramics. Properties of zircon: polymorphism and transformation toughness. Properties of lithium disilicate ceramics. Application of different ceramic materials in fixed prosthetics. 1 5. Color. The theory of color. Physical aspects of color. Physiological aspects of color 1 6. Fixed dental restoration and the patient - subjective and objective assessment of the quality of the restoration, impact on the quality of life. 1 7. Restoration of endodontically treated teeth. Therapy plan and assignments. 1 8. Type of post and core. 1 9. Physiologically optimal occlusion and its characteristics. 1 10. Systemic factors in the pathogenesis of TMD, occlusion as a factor in TMD, prevention of TMD and disorders 1 11. Biological basis of complete edentulism and biological basis of partial edentulism 1 12. Load on supporting tissues with prosthetic replacements 1 13. Modern therapeutic procedures in the treatment of edentulism 1 14. Principles of computerized dentistry 1 15. Prosthetic replacement and the patient, subjective and objective evaluation of the quality of the replacement, impact on the quality of life 1 16. Approach to solving prosthetic problems in old people and the specificity of therapy 1 17. Materials in oral implantology. Metal, non-metal and complex materials. Physical-mechanical and biological characteristics of implant materials. 1 18. The influence of microdesign of implants on bioadhesion and the process of osseointegration of implants. Stresses and deformations of implants in function. 1 19. Therapeutic possibilities in patients with bone deficiency. Surgical procedures for bone augmentation. 1 20. Sinus lift - the specificity of surgical procedures. 1 **Exercises / hours** 1. Practical implementation of the procedure of writing a doctoral dissertation 1

	2. Practical approach to the research methodology. 1 3. Buildup dental materials - ceramics. Classification and chemical composition. Physical and mechanical characteristics of ceramic materials and their influence on the selection of ceramic material for certain indications. 1 4. High technologies in the processing of dental materials. CAD/CAM design, sintering and processing.1 5. Determining the color of teeth. Conventional determination of the color of teeth. Instrumental determination of tooth color. 1 6. Subjective and objective evaluation of the quality of fixed prosthetic work and the impact on the quality of life 1 7. Indications for making a post and core. Therapy plan, material selection and manufacturing process. 1 8. Examination of the stress distribution of tooth roots restored with different types of post and cores 1 9. Collection and analysis of scientific facts 1 10. Methods of evaluating the success of different prosthetic replacements 1 11. Analysis of clinical, instrumental and laboratory methods for the needs of research 1 12. Therapy modalities 1 13. Evaluation of existing scientific evidence and empirical facts 1 14. Presentation of cases from scientific research work and cases from practice 1 15. Presentation of cases from scientific research work and cases from practice 1 16. Presentation of cases from scientific research work and cases from practice 1 17. Prospective research on the placement of endoseal implants. 1 18. Augmentation procedures in implantology (hard and soft tissues). 1 19. Prospective research on the placement of bone substitute material. 1 20. Computer-guided implant procedures. 1 **Seminars / hours** 1. The process of writing a doctoral dissertation 1

	2. Planning the development of research design 1 3. Analysis of modern literature 1 4. Publication of papers 1 5. Planning of prospective research in implantology 1

Item code: **SF DS GP 24E**	**Course Title: ORAL MEDICINE AND PERIODONTOLOGY 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Modern aspect of periodontal therapy of infrabony pockets 2 2. Biological aspect of regenerative therapy 2 3. Plastic surgical procedures in recession reconstruction 2 4. Application of bio membranes and bone substitutes in periodontology 2 5. Goals, problems and aesthetic solutions in periodontology 2 6. Changes in the oral mucosa in patients affected with HIV and hepatitis 2 7. Diagnosis and therapy protocol in patients with blood diseases 2 8. Oral precancers – diagnosis, differential diagnosis and therapy protocol 2 9. Differential diagnosis of oral ulcerations 2 10. Drug therapy of the oral mucosa diseases 2 **Exercises / hours** 1. Assessment of periodontal health and X-ray analysis after non-invasive methods in periodontology 2 2. Making a diagnosis for operative procedure and patient preparation 2 3. X-ray analysis and clinical assessments of the periodontium after		

	periodontal surgery 1 4. Presentation of patients with periodontal surgical procedures 2 5. Pulpo-periodontal complications, diagnosis, therapy 1 6. Guided bone and tissue regeneration, when and why? 2 7. The significance of "Reacolla" support therapy 1 8. Presentation of clinical cases and differential diagnosis of oral ulcerations 1 9. Clinical examination and diagnosis of oral mucosa diseases in psychoactive substances addicts 1 10. Diagnosis and therapy protocol in HIV patients 1 11. Clinical and laboratory evaluation of oral changes in blood dyscrasias 1 12. Evaluation of clinical results, lab and ph results of precancerous lesions 1 13. Drug therapy – significance and side effects 1 14. Clinical evaluation of the link between oral mucosa diseases and skin diseases 1 15. Evaluation of therapy procedures in the treatment of autoimmune diseases of the oral cavity – through research 1 16. Analysis of success of different methods of covering recessions – through research 1

Item code: **SF DS GP 25E**	**Course Title: PREVENTIVE DENTISTRY AND PEDODONTICS 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Endodontic treatment of primary teeth 2 2. Endodontic treatment of immature permanent teeth 2 3. Biomaterials in pediatric dentistry 2		

	4. Experimental studies of biocompatibility and cytotoxicity of dental materials 2 5. Radiographic evaluation of periodontium in child age 2 6. Diagnostic research on the influence of therapeutic and prophylactic agents in treatment of gingivitis and periodontitis in children 2 7. Child abuse and the role of a dentist in its identification 2 8. Recognition and reporting of child abuse and neglect - research studies 2 9. Diagnostic criteria of dental caries and prevalence of its progression in population – epidemiological aspects 2 10. Dental anxiety and behavioral techniques in pediatric dentistry 2 **Exercises / hours** 1. Microbiological markers of oral diseases in children and their application1 2. The relationship between nutrition and oral health 1 3. Pulpo-dentine complex protection in the young permanent teeth 1 4. Application of analysis of qualitative and quantitative composition of saliva in the diagnosis of oral diseases. 1 5. Analysis of the frequency of oral manifestations of developmental anomalies and syndromes in children 1 6. Analysis of research on the assessment of dental fear and anxiety in children and adolescents 1 7. Analysis of the different methods of endodontic treatment in primary dentition 1 8. Clinical importance of minimally invasive procedures in pediatric dentistry 1 9. Specifics of the use of radiology in the research of the orofacial region in pediatric population 1 10. Identification of the impact of systemic diseases on oral health in children 1 11. Analysis of the evaluation methods of different materials in restorative dentistry 1 12. Analysis of methods for assessing the effectiveness of preventive measures and

	prophylactic procedures for the protection of oral health in children and adolescents 1 13. Research on oral health during pregnancy 1 14. Temporary composite bridges in pedodontics 1 15. The assessment of signs of child abuse and neglect 1 16. Survey questionnaire as a method of examining knowledge, attitude and practice for the medical staff in recognizing child abused and neglect 1 17. General and specific preventive measures for dental trauma in dentistry 1 18. Evaluation of dental research in the community 1 19. Teeth anomalies, defining of morphological and topographical characteristics 1 20. Stem cells- possibilities of the application in regenerative therapy 1

Item code: **SF DS GP 26E**	**Course Title: ORTHODONTICS 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Aim (objectives) of the course:	Students will be able to independently: • Search the literature in the domain of orthodontics, both from the aspect of basic orthodontic research and clinical and epidemiological research. • To present research results independently Provide students basic and new knowledge of orthodontics - application of diagnostic methods, therapeutic outcomes, epidemiological studies, occlusion and temporomandibular joint, and multidisciplinary research.		
Thematic units:	**Lectures content/hours** 1. Radiographic and photogrammetric diagnostics 7 2. Outcomes of orthodontic treatment 5 3. Experimental research in orthodontics 4 4. Multidisciplinary research 4 **Exercises / hours** Radiographic and photogrammetric		

	diagnostics 1. Orthopantomogram analysis 2 2. Cephalogram analysis 2 3. Morphomotric analysis 2 4. Dental photography analysis 1 Outcomes of orthodontic treatment 5. Side effects of orthodontic treatment 2 6. Side effects of orthodontic treatment 2 7. Side effects of orthodontic treatment 1 Experimental research in orthodontics 8. Experimental tooth movement 2 9. Finite element analysis 1 10. Finite element analysis 1 Multidisciplinary research 11. Interdisciplinary research 2 12. Interdisciplinary research 1 13. Interdisciplinary research 1 **Seminars** 1. Radiographic and photogrammetric diagnostics (1 review article) 2. Outcomes of orthodontic treatment (1 review article) 3. Experimental research in orthodontics (1 review article) 4. Multidisciplinary research (2 review articles)
Learning outcomes:	Student will be able to: • Critical approaches to theories of growth and development of the craniofacial system • Classifies malocclusions according to different criteria • Assess the degree of orthodontic treatment need
Teaching methods:	Lectures, practical exercises, writing review articles

Item code: **SF DS GP 27E**	**Course Title: ORAL SURGERY WITH DENTAL IMPLANTOLOGY 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type:	

	Lectures **20** Exercises **20** Seminar **5**
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]
Thematic units:	**Lectures content/hours** 1. Pre-prosthetic surgery 1 2. Pre-prosthetic surgery 1 3. Pre-prosthetic surgery - an aspect of surgery of bone structures 1 4. Pre-prosthetic surgery - an aspect of surgery of bone structures 1 5. Pre-prosthetic surgery - an aspect of surgery of bone structures 1 6. Pre-prosthetic surgery - an aspect of soft tissue surgery 1 7. Pre-prosthetic surgery - an aspect of soft tissue surgery 1 8. Pre-prosthetic surgery - an aspect of soft tissue surgery 1 9. Surgery of cystic formations of soft tissues 1 10. Surgery of cystic formations of soft tissues 1 11. Benign tumors in oral surgery casuistry 1 12. Benign tumors in oral surgery casuistry 1 13. Hemangiomas 1 14. Hemangiomas 1 15. Odontomas and dentogenic tumors 1 16. Odontomas and dentogenic tumors 1 17. Keratocysts and cyst- like formations 1 18. Keratocysts and cyst- like formations 1 19. Keratocysts and cyst- like formations 1 20. Keratocysts and cyst- like formations 1 **Exercises / hours** 1. Possibilities of apicotomy of multi-rooted teeth 1 2. Possibilities of apicotomy of multi-rooted teeth 1 3. Possibilities of apicotomy of multi-rooted teeth 1 4. Possibilities of apicotomy of multi-rooted teeth 1 5. Surgical management of oroantral communications and fistulas 1 6. Surgical management of oroantral communications and fistulas 1 7. Surgical management of oroantral communications and fistulas 1 8. Surgical management of oroantral communications and fistulas 1 9. Surgical treatment of odontogenic infections 1 10. Surgical treatment of odontogenic infections 1 11. Surgical treatment of odontogenic infections 1 12. Surgical treatment of odontogenic infections 1 13. Antibiotics in OS practice 1

	14. Antibiotics in OS practice 1 15. Premedication and prophylaxis of OS procedures 1 16. Premedication and prophylaxis of OS procedures 1 17. Oral surgical treatment of patients with mental and physical disabilities 1 18. Oral surgical treatment of patients with mental and physical disabilities 1 19. Oral surgical treatment of patients with mental and physical disabilities 1 20. Oral surgical treatment of patients with mental and physical disabilities 1

Item code: **SF DS GP 28E**	**Course Title: MAXILLOFACIAL SURGERY 1**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: **Lectures** 20 **Exercises** 20 Seminar 5	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Infection of the deep spaces of the head and neck in general 2 2. Specific head and neck inflammations 2 3. Infections of the bony tissue of the viscerocranium 2 4. Fractures of bony structures of the visceral skull and soft tissue injuries 2 5. Diseases of the cranial nerves 2 6. Diseases of the temporomandibular joint 2 7. Diseases of the salivary glands 2 8. Tumors of the maxillofacial region 2 9. Congenital anomalies of soft tissues and bony deformities of the maxillofacial region 2 10. Reconstructive procedures in maxillofacial surgery and aesthetic surgery faces 2 **Exercises / hours** 1. Analysis of basic diagnostic procedures in head and neck surgery, MRI and CT, EHO, etc. 2 2. Clinical examinations/inspection-directoscopy, indirectoscopy, palpation, percussion, etc. 1		

	3. Forming a medical history for a hospital patient 2 4. Less invasive diagnostic procedures in MFH surgery 1 5. Minor interventional surgical procedures in outpatient MFH surgery 1 6. Implementation in the operating room 2 7. Monitoring of local and general status in the early postoperative period 2 8. Conducting video conferences in the operating room 1 9. Conducting video conferences in the operating room 2 10. Conducting video conferences in the operating room 1 11. Conducting video conferences in the operating room 1 12. Conducting video conferences in the operating room 1 13. Implementation in the operating room 1 14. Implementation in the operating room 1 15. Implementation in the operating room 1

Item code: **SF DS GP 29E**	**Course Title: DENTAL IMPLANTOLOGY 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. Bioengineering in dental implantology. Explain the structure and properties of the materials from which dental implants are made and prosthetic components for dental implantology. 2 2. Application and proper selection of radiological methods in dental implantology. Present the fundamental radiological methods used to diagnose and planning in dental implantology. During the lecture it will be explained in detail the use of Sidex and Galileos implant planning software. 4 3. Treatment planning and surgical procedures in dental implantology. Explaining the basic planning postulates in dental implantology with reference to		

	anatomical limits and physiology of the bone. Giving "step by step" presentation of surgical procedures in dental implantology. 4 4. Peri-implant histology.The lecture will bring closer the relationship between the implant and the surrounding bone tissue and biological changes that occur in bone tissue after implant insertion. 3 5. Case report in dental implantology. Through the case report the correct selection of patients, planning in dental implantology, presentation of the latest strategic surgical procedures of implantation, recommendations to reduce postoperative complications will be presented. Each case will be analyzed and discussed in detail. 4 6. Prosthodontics in dental implantology. During lectures, doctoral students will be given detailed didactic and clinical instructions regarding techniques and procedures aimed at successful and complete rehabilitation of patients with prosthetic superstructures on dental implants. Advanced clinical and laboratory procedures with an accent on components for the restoration of partially and completely edentulous patients will be presented. 3 **Exercises / hours** 1. Introducing different brands of dental implants on the market advantages and disadvantages 2 2. Selection of patients for implantation 2 3. The use of X-rays, RVG images and OPG images in implantology, analysis of cases 2 4. The use of the 3D CTCB device in implantology and the analysis of cases using Sidex and Galileos implant planning software 1 5. Planning of the implant placement in the upper jaw with reference to anatomical limits and bone physiology 1 6. Surgical procedures of sinus lift surgery 1 7. Planning of the implant placement in the lower jaw with reference to anatomical limits and bone physiology 1 8. Presentation of implant placement in the upper jaw area of the frontal teeth 1 9. Presentation of implant placement in the upper jaw area of the posterior region 1 10. Presentation of implant placement in the lower jaw area of the frontal teeth 1 11. Presentation of implant placement in the lower jaw area of the posterior region 1 12. Presentation of the placement of the gingiva former after the opening of the implants 1 13. Selection of superstructures for certain cases 1 14. Presentation of prosthetic replacements on implants - missing one tooth 1

	15. Presentation of prosthetic replacements on implants - missing of multiple teeth 1 16. Presentation of prosthetic replacements on implants - missing all teeth 1 17. Presentations of possible complications and failures in dental implantology 1

Item code: **SF DS GP 210E**	**Course Title: DENTAL RADIOLOGY 2**		
Cycle: III	**Year: II**	**Semester: III**	**Number of ECTS credits:** 10
Status: elective		**Total number of hours: 45** Optionally develop the distribution of hours by type: Lectures **20** Exercises **20** Seminar **5**	
Teaching participants:	**Teachers and associates selected in the field to which the subject belongs / subject** [d**o not enter names in this section. Leave the wording as indicated in this sectio**n]		
Thematic units:	**Lectures content/hours** 1. The role and importance of radiological procedures in dentistry 3 2. Imaging methods in the diagnosis of diseases of the orofaciol region 3 3. Digital orthopantomgraphic method 2 4. Diagnosing diseases of the TM joint – radiographic methods 2 5. Diagnosing diseases of the TM joint – MR method 2 6. Diagnosing of diseases of the major salivary glands – possibilities of radiographic methods anf MR method 2 7. Imaging diagnosis of lessions in the soft tissue structures of the orofacial region 3 8. X-ray image of the most common syndroms related to the orofacial region 3 **Exercises / hours** 1. The role of the dentist in performing certain radiographic and diagnostic procedures 3 2. Interpretation of images obtained by imaging methods 3 3. Defining indications for performing various diagnostic radiographic procedures 2 4. Basic principles of pationt and staff protection during the performance of various radiographic procedures 2 5. Definition and critical review of indications for performing digital orthopantomographic methods 3		

	6. Principles of performing an examination using the MR method 2 7. Valorization of advantages of radiographic and digital methods 2 8. Comparative analysis of the results of radiographic and MR procedures in diagnosing diseases of the orofacial region 3