



## UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Simulacije endoskopskih in ultrazvočnih preiskav v interni medicini
<b>Course title:</b>	Simulation of Endoscopic and Ultrasound Examination in Internal Medicine

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Splošna medicina		3,4,5,6	6,8,10,12
General Medicine			

**Vrsta predmeta / Course type**

**Univerzitetna koda predmeta / University course code:**

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
5	40				45	3

**Nosilec predmeta / Lecturer:**

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

**Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:**  **Prerequisites:**

**Vsebina:**

Glede na želje študentov je prav s pomočjo simulatorjev MENTOR-SIMBIONIX omogočeno poglobljeno znanje za učenje endoskopske preiskave (EGDS, koloskopija, ERCP-EPT, EUZ). Ob indikaciji za invazivne posege, kar so vse endoskopije prebavil, mora NAPOTNI ZDRAVNIK z bolnikom opraviti POJASNILNO DOLŽNOST. V tem primeru mora zdravnik, ki izda napotnico za planiran poseg opraviti z bolnikom POJASNILNO DOLŽNOST. Na razumljiv način mu mora predstaviti potek, način preiskave ter pričakovani oz. diagnostično terapevtski rezultat. Opozoriti ga mora tudi na eventualne ZAPLETE. Z aktivnim delom na simulatorjih pridobi študent zahtevane informacije oziroma znanje. Z UZ simulacijami se uči propedevtičnih znanj anatomije trebušne votline. Odstopanja od normale so podane v rezultatu izvida pregleda. Na voljo je 80 virtualnih bolnikov s kliničnimi podatki in planiranimi algoritmi. Napredovanje v pridobivanju simuliranih veščin se ocenjuje po objektivnih kriterijih, kar je tudi podatek o doseženem znanju.

Prvi modul za **endoskopijo spodnje prebavne cevi (kolonoskopija)**

Modul je namenjen študentom, ki so šele pričeli s

**Content (Syllabus outline):**

Following the students' preferences the simulation system MENTOR-SIMBIONIX enables the acquisition of in-depth knowledge in endoscopic examinations (EGDS, coloscopy, ERCP/EPT, EUS). If an invasive intervention is indicated (like all digestive endoscopies), the PRESCRIBER ISSUING A REFERRAL is obliged to obtain an INFORMED CONSENT from the patient. The prescriber is required to present the course and manner of the procedure, as well as the expected diagnostic therapeutic result in a comprehensive manner. The prescriber also needs to point out the possible COMPLICATIONS. By performing active work on simulators the students acquire the necessary information or knowledge. Ultrasound simulations enable the acquisition of propaedeutic knowledge in abdominal anatomy. Deviations are listed in the medical report. There are 80 virtual patients with clinical data and planned algorithm available. The progress in acquiring simulation skills is assessed according to objective criteria, which also demonstrates the level of acquired knowledge.

First Module for **Lower Gastrointestinal Endoscopy (Colonoscopy)**

The module is intended for trainees who have just begun

praktičnim usposabljanjem na področju kolonoskopije.  
Cilji:

- Izvajanje pregleda spodnjih prebavil s pomočjo videoendoskopa.
- Izvajanje diagnostičnih in terapevtskih posegov pri »pacientih« z različnimi anatomskimi variacijami črevesja.
- Prepoznavanje tipičnih lezij in abnormalnih struktur.
- Izvajanje osnovnih terapevtskih posegov.

Modul ima na voljo 10 scenarijev, ki si sledijo glede na težavnostno stopnjo: od preprostega diagnostičnega postopka do težavnega primera, ki zajema vse cilje tega modula.

Anatomija, normalno tkivo, melanoza, angiodisplazija, divertikli, psevdOMEMBRANE, tumor, pedunkularen polip, ishemični kolitis, sesilni polip, psevdopolipi, divertikel, Chronova bolezen.

#### Drugi modul za **endoskopijo spodnje prebavne cevi (kolonoskopija)**

Modul je namenjen študentom, ki so šele pričeli s praktičnim usposabljanjem na področju kolonoskopije.

Cilji:

- Izvajanje pregleda spodnjih prebavil s pomočjo videoendoskopa.
- Prepoznavanje tipičnih lezij in abnormalnih struktur.
- Izvajanje diagnostičnih in terapevtskih posegov pri »pacientih« z različnimi anatomskimi variacijami in patologijami črevesja.

Modul ima na voljo 10 scenarijev, ki jih je napisal prof. Florent, iz bolnišnice Saint-Antoine, Pariz, Francija.

Anatomija, pedunkularen polip, ishemični kolitis, ulcerozni kolitis, difuzna angiomatoza, divertikel, divertikulitis, psevdOMEMBRANSKI kolitis, benigni tumor, Crohnova bolezen.

#### Prvi modul za **endoskopijo zgornje prebavne cevi (gastroskopija)**

Ta modul je namenjen študentom, ki so šele pričeli s praktičnim usposabljanjem na področju endoskopije zgornje prebavne cevi.

- Izvajanje pregleda zgornjih prebavil s pomočjo videoendoskopa.
- Izvajanje diagnostičnih in terapevtskih posegov pri »pacientih« s težjo patologijo.
- Prepoznavanje tipičnih lezij.
- Izvajanje osnovnih terapevtskih posegov.

Modul ima na voljo 10 scenarijev, ki si sledijo glede na težavnostno stopnjo: od preprostega diagnostičnega postopka do težavnega primera, ki zajema vse cilje tega modula.

Anatomija, normalno tkivo, divertikel, ulkus, vnetje,

the "hands-on" phase of learning and training in Colonoscopy.

The module objectives are:

- Performing a complete survey of the Lower GI tract with a forward viewing video-endoscope.
- Performing diagnostic and therapeutic procedures in "patients" with different colon anatomies.
- Recognition of typical lesions and abnormalities.
- Performing basic therapeutic procedures.

The module consists of 10 cases. The cases are arranged hierarchically from a simple diagnostic procedure to a difficult case, involving all training objectives of this module.

Anatomy, normal tissue, melanosis, angiodysplasia, diverticula, pseudOMEMBRANES, tumor, pedunculated polyp, ischaemic colitis, sessile polyp, pseudopolyps, diverticulum, Crohn's disease.

#### Second Module for **Lower Gastrointestinal Endoscopy (Colonoscopy)**

The module is designed for trainees who have just begun the "hands-on" phase of learning and training in Colonoscopy.

The module objectives are:

- Performing a complete survey of the Lower GI tract with a forward viewing vide-endoscope.
- Recognition of typical lesions and abnormalities.
- Performing diagnostic and therapeutic procedures in "patients" with different colon anatomies and pathologies.

The module consists of 10 cases. The cases were created by Prof. Florent, Hopital Saint-Antoine, Paris, France.

Anatomy, pedunculated polyp, ischaemic colitis, ulcerative colitis, diffuse angiomatosis, diverticulum, diverticulitis, pseudOMEMBRANOUS colitis, benign tumor, Crohn's disease.

#### First Module for **Upper Gastrointestinal Endoscopy (Gastroscope)**

This module is intended for trainees who have just begun the "hands-on" phase of learning and training in Upper GI Endoscopy.

- Performing a complete survey of the Upper GI tract with a forward viewing video-endoscope.
- Performing diagnostic and therapeutic procedures in "patients" with major pathologies.
- Recognizing typical lesions.
- Performing basic therapeutic procedures.

The module consists of 10 cases. The cases are arranged hierarchically from a simple diagnostic procedure to a difficult case, involving all training objectives of this module.

Anatomy, normal tissue, diverticulum, ulcer,

sesilni polip, tumor, krvaveči ulkus, varice, leiomiom, pedunkularen polip, arteriovenska malformacija.

#### Drugi modul za **endoskopijo zgornje prebavne cevi (gastroskopija)**

Ta modul je namenjen študentom, ki so šele pričeli s praktičnim usposabljanjem na področju gastroskopije.

Cilji:

- Izvajanje pregleda zgornjih prebavil s pomočjo videoendoskopa.
- Prepoznavanje tipičnih lezij.
- Izvajanje diagnostičnih in terapevtskih posegov pri »pacientih« s težjo patologijo.

Modul ima na voljo 10 scenarijev, ki jih je napisal prof. Florent, iz bolnišnice Saint-Antoine, Pariz, Francija.

Ezofagealne varice, krvaveči ulkus, celiakija, cistična razširitev fundusnih žlez, degeneriran gastrični polip, ezofagealni ulkus, psevdo-Whippleva bolezen, žilna ektazija antruma želodca (lubenični želodec), hemoragični gastritis, portalna hipertenzivna gastropatija.

Prvi modul za **krvavitve**

Ta modul nudi izkušnim zdravnikom endoskopistom, študentom in **MEDICINSKIM SESTRAM** model za učenje in ukrepanje pri urgentnih stanjih s krvavitvami, ki zahtevajo takojšnje ukrepanje.

Cilji:

- Izvajanje celotnega urgentnega endoskopskega pregleda zgornjih prebavil
- Izvajanje diagnostičnih postopkov pri »pacientih«, ki imajo simptome krvavečih lezij
- Izvajanje terapevtskih postopkov z uporabo različnega inštrumentarija, ki se uporablja pri krvavitvah

Modul ima na voljo 10 scenarijev, ki vključujejo vse zgoraj navedene cilje usposabljanja. Scenarije sta napisala dr. Sven Adamsen in dr. Soren Meisner, Bispebjerg Hospital, Kopenhagen, Danska.

Krvaveči ulkus, ulkus s strdkom, razjeda Dieulafoy, Mallory-Weiss sindrom, manjši rak, razjeda na dvanajstniku, prepilorični ulkus.

#### Prvi moduli za **ultrazvok (UZ), endoskopski ultrazvok (EUZ), endoskopska retrogradna holangiopankreatografija (ERCP)**

Izkušeni endoskopisti, študenti in **MEDICINSKE SESTRE** lahko s pomočjo tega modula vadijo diagnostične in terapevtske postopke, kot so UZ, EUZ, ERCP.

- Izvajanje postopka, s pomočjo katerega poiščemo papilo z uporabo pravega duodenoskopa
- Izvajanje kanilacije papile ter radiografski prikaz biliarnega trakta in pankreasovega voda
- Izvajanje diagnostičnih postopkov pri

inflammation, sessile polyp, tumor, bleeding ulcer, varices, leiomyoma, pedunculated polyp, AV malformation.

#### Second Module for **Upper Gastrointestinal Endoscopy (Gastroscopy)**

This module is designed for trainees who have just begun the "hands-on" phase of learning and training in Gastroscopy.

The module objectives are:

- Performing a complete survey of the Upper GI track with a forward viewing video-endoscope.
- Recognizing typical lesions.
- Performing diagnostic and therapeutic procedures in "patients" with major pathologies.

The module consists of 10 cases. The cases were created by Prof. Florent, Hopital Saint-Antoine, Paris, France.

esophageal varices, bleeding ulcer, celiac disease, cystic dilation of fundic glands, degenerated gastric polyp, ulcer of esophagus, pseudo-whipple, watermelon stomach, hemorrhagic gastritis, portal hypertensive gastropathy.

#### First Module for **Bleeding Situations**

The module is designed to provide skilled endoscopists, trainees and **NURSES** with a training model for emergency bleeding situations that require an urgent treatment.

The module objectives are:

- Performing complete survey of the upper GI tract throughout an emergency endoscopy.
- Performing diagnostic procedures in "patients" with symptoms of bleeding lesions.
- Performing therapeutic procedures using a variety of appropriate accessories (tools) intended for bleeding pathologies.

The module consists of 10 cases which include all the indicated training objectives. The cases were created by Dr. Sven Adamsen and Dr. Soren Meisner, Bispebjerg Hospital, Copenhagen, Denmark.

Bleeding ulcer, ulcer with a clot, dieulafoy's lesion, Mallory-Weiss Tear, small cancer, duodenal ulcer, pre-pyloric ulcer.

#### First Modules for **Ultrasound (US), Endoscopy Ultrasound (EUS), Endoscopic Retrograde Cholangio-Pancreatography (ERCP)**

The module is designed to provide skilled endoscopists, trainees and **NURSES** with the opportunity for basic training of diagnostic and therapeutic US, EUS, ERCP procedures.

- Performing the manoeuvre required to find the papilla using an actual duodenoscope.
- Performing cannulation of the papilla and radiographic demonstration of the biliary tree and pancreatic duct.

<p>»pacientih«, ki imajo različna obolenja žolča in pankreasa.</p> <ul style="list-style-type: none"> <li>• Izvajanje osnovnih terapevtskih postopkov s pomočjo različnega inštrumentarija.</li> </ul> <p>Modul ima na voljo 10 scenarijev, ki vključujejo vse zgoraj navedene cilje usposabljanja.</p> <p>UZ, EUZ, fluoroskopska slika, normalna anatomija biliarnega sistema in pankreasovega voda, holelitiaza, holangiokarcinom, holedoholitiaza, rak papile Vateri, rak pankreasa, mehanična litotripsija, nabiranje tekočine ob jetrih, endoskopska sfinkterotomija z ali brez vstavitve stenta, biliarna drenaža.</p> <p>Drugi modul za <b>endoskopsko retrogradno holangiopankreatografijo (ERCP)</b></p> <p>Modul je namenjen za nadaljevalno usposabljanje in učenje zapletenih ERCP-postopkov.</p> <p>Cilji:</p> <ul style="list-style-type: none"> <li>• Vaje z novimi medicinskimi primeri z značilno patologijo</li> <li>• Izvajanje postopkov za iskanje papile, kanilacije in radiografskega prikaza biliarnega trakta.</li> <li>• Uporaba širokega nabora inštrumentarija za izvajanje sfinkterotomije in terapije.</li> <li>• Usposabljanje za ravnanje s plastičnimi in kovinskimi stenti.</li> </ul> <p>Modul ima na voljo 10 scenarijev, ki vključujejo vse zgoraj navedene cilje usposabljanja.</p> <p>Scenariji so nastali v sodelovanju z doc. dr. Michaelom Keymlingom, s klinike Meiningen, Nemčija.</p> <p>Fluoroskopska slika, kronično vnetje pankreasa, ekstrakcija kamna s košarico, ekstrakcija kamna z balonom, plastični stent, krtačna biopsija, kovinski stent.</p> <p>Prvi modul za <b>fleksibilno sigmoidoskopijo</b></p> <p>Razvoju tega modula botrujejo naraščajoče potrebe po usposabljanju za fleksibilno sigmoidoskopijo.</p> <p>Cilji:</p> <ul style="list-style-type: none"> <li>• Seznanitev s fleksibilno sigmoidoskopijo in indikacijami za presejanje raka na črevesju.</li> <li>• Izvajanje fleksibilne sigmoidoskopije na težavni in neobičajni anatomiji.</li> <li>• Prepoznavanje različnih in pogostih patologij ter izvajanje biopsij</li> <li>• Določanje primernosti fleksibilne sigmoidoskopije za presejanje raka na črevesju pri rizičnih skupinah ljudi.</li> <li>• Pripraviti ustrezna priporočila na podlagi splošnih endoskopskih najdb</li> </ul> <p>Modul ima na voljo 10 scenarijev, ki vključujejo vse zgoraj navedene cilje usposabljanja.</p> <p>Scenariji so nastali v sodelovanju z dr. Dariusom Sorbijem in dr. Davidom Fleischerjem, klinika Mayo, Scottsdale, Arizona, ZDA. Symbionix Ltd. (2002).</p> <p>Anatomija, divertikel, angiодisplazija, hemoroidi,</p>	<ul style="list-style-type: none"> <li>• Performing diagnostic procedures in "patients" with different biliary and pancreatic diseases.</li> <li>• Performing basic therapeutic procedures using a variety of accessories (tools).</li> </ul> <p>The module consists of 10 cases which include all the indicated training objectives.</p> <p>US, EUS, fluoroscopic view, normal anatomy of the biliary system and pancreatic duct, cholelithiasis, cholangiocarcinoma, choledocholithiasis, cancer of the papilla of Vater, pancreatic cancer, mechanical lithotripsy, collection of fluid adjacent to the liver, endoscopic sphincterotomy with or without stent insertion, biliary drainage.</p> <p>Second Module for <b>Endoscopic Retrograde Cholangio-Pancreatography (ERCP)</b></p> <p>The Module provides the opportunity for advanced training on complicated ERCP procedures.</p> <p>The module objectives are:</p> <ul style="list-style-type: none"> <li>• Practicing new medical cases with distinctive pathologies.</li> <li>• Performing scope maneuvers to find the papilla, cannulation and radiographic demonstration of the biliary system.</li> <li>• Using a wide variety of accessories (tools) to perform sphincterotomy and therapy.</li> <li>• Training on the manipulation of plastic and metal stents.</li> </ul> <p>The module consists of 10 cases that include all the above indicated training objectives.</p> <p>The cases were created in collaboration with PD Dr. med. Michael Keymling, Klinikum Meiningen, Germany.</p> <p>Fluoroscopic view, chronic inflammation of the pancreas, extraction of the stone with a basket, extraction of the stone with a ballonn, plastic stent, brush biopsy, metal stent.</p> <p>First Module for <b>Flexible Sigmoidoscopy</b></p> <p>The Module has been developed to meet the growing need for training in flexible sigmoidoscopy.</p> <p>The module objectives are to:</p> <ul style="list-style-type: none"> <li>• Become familiar with flexible sigmoidoscopy and the indications for colon cancer screening</li> <li>• Perform flexible sigmoidoscopy given difficult and unusual anatomies</li> <li>• Recognize various common pathologies and perform biopsies as indicated</li> <li>• Determine the appropriateness of flexible sigmoidoscopy for colon cancer screening in high-risk populations</li> <li>• Make appropriate recommendations based on common endoscopic findings</li> </ul> <p>The module consists of 10 cases which include all the above indicated training objectives.</p> <p>The cases were created in collaboration with Dr. Darius</p>
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divertikli, psevdOMEMbrane, ulceracija in psevdopolipi, polip, tumor.

Sorbi and Dr. David Fleischer, Mayo Clinic, Scottsdale, AZ, USA. Symbionix Ltd. (2002).

Anatomy, diverticulum, angiodysplasia, haemorrhoids, diverticula, pseudomembranes, ulceration and Pseudopolyps, polyp, tumor.

#### Temeljni literatura in viri / Readings:

1. Felsher JJ, Osesevich M, Farres H, Rosen M, Fanning A, Dunkin BJ, Marks JM. Validation of a flexible Endoscopy simulator. *Am J Surg.* 2005;189:497-500.
2. Berberat PO, de Wit NJ, Bockhom M, Lundell L, Drenth JP. Training innovations in gastroenterology and educational resources: a new vision of gastrointestinal education across Europe. *Eur J Gastroenterol Hepatol.* 2010;22:1393-6.
3. Koch AD, Buzink SN, Heemskerk J, Botden SM, Veenendaal R, Jakomiwicz JJ, Schoon EJ. Expert and construct validity of the Symbionix GI Medntor II endoscopy simulator for colonoscopy. *Surg Endosc.* 2008;22:158-62.
4. Götzberg M, Rösch T, Geisenhof S, Gülberg V, Schmitt W, Niemann G, Kopp VM, Faiss S, Heldwein W, Fischer MR. Effectiveness of a novel endoscopy training concept. *Endoscopy.* 2011;43:802-7.
5. Flis V, Kobilica N. osnove ultrazvočne anatomije trebušne votline. Založba Pivec in Medicinski mesečnik, Maribor 2009.
6. Alty J, Hoey E. Practical ultrasound. An illustrated guide. London: The Royal Society of Medicine Press; 2006.
7. Afonso N, Amponsah D, Yang J, Mendez J, Bridge P, Hays G, Baliga S, Crist K, Brennan S, Jackson M, Dulchavsky S. Adding new tools to the black bag-introduction of ultrasound into the physical diagnosis course. *J Gen Intern Med.* 201;25:1248-52.
8. Butter J, Grant TH, Egan M, Kaye M, Wayne DB, Carrion-Carire V, McGaghie WC. Does ultrasound training boost Year 1 medical student competence and confidence when learning abdominal examination? *Med Educ* 2007;41:843-8
9. Alpert JS, Mladenovic J, Hellmann DB. Should a hand-carried ultrasound machine become standard equipment for every internist? *Am J Med.* 2009; 122:1-3.
10. Bahner DP, Hughes D, Royall NA. I-AIM: A Novel Model for Teaching and Performing Focused Sonography. *J Ultrasound Med.* 2012;31:295-300.
11. Roelandt JR. Ultrasound stethoscopy: a renaissance of the physical examination? *Heart* 2003;89:971-3.
12. Skalicky M, Križmarič M, Lorber D, Bevs S. Simulacija ultrazvočnega pregleda trebuha s prenosnim abdominalnim "fonendoskopom" : 23. Srečanje internistov in zdravnikov družinske medicine "Iz prakse za prakso", Maribor, 25. in 26. maj 2012, 2012; 31-34
13. Skalicky M, Križmarič M, Lorber D, Bevs S. Simulacije endoskopskih invazivnih posegov zgornje in spodnje prebavne cevi vključno z endoskopskim ultrazvokom in ERCP. : 23. Srečanje internistov in zdravnikov družinske medicine "Iz prakse za prakso", Maribor, 25. in 26. maj 2012, 2012; 35-41

**Cilji in kompetence:**

**Objectives and competences:**

Seznanitev z indikacijami invazivnih endoskopskih preiskav in aktivno praktično delo.

To acquire knowledge in indications for invasive endoscopic examination and active practical work.

**Predvideni študijski rezultati:**

Znanje in razumevanje:  
Poglobljeno znanje o invazivnih preiskavah prebavne cevi za korektne indikacije in izvedbo pojasnilne dolžnosti napotnega zdravnika.  
Uporabljanje prenosnega UZ aparata kot abdominalnega fonendoskopa v propedeutično-klinične namene.

**Intended learning outcomes:**

Knowledge and understanding:  
Improved knowledge in invasive examinations of the alimentary canal for correct indications and implementation of the informed consent (duty to supply information) of the prescriber.  
The use of a portable ultrasound device as an abdominal phonendoscope for propaedeutic clinical purposes.

**Metode poučevanja in učenja:**

Praktično delo pod vodstvom mentorja. Predstavitev ter vrednotenje dopolnjene osebne zdravniške opreme s prenosnim UZ.

**Learning and teaching methods:**

Practical clinical work under the supervision of the tutor. Presentation and evaluation of the personal medical equipment supplemented by a portable ultrasound.

**Načini ocenjevanja:**

Delež (v %) /  
Weight (in %)

**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt) Seminarska naloga	100 %	Type (written and oral examination, coursework, project): Seminar paper
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**Reference nosilca / Lecturer's references:**

23. srečanje internistov in zdravnikov družinske medicine - Zbornik predavanj »Iz prakse za prakso« leto 2012: Simulacije endoskopskih invazivnih prosegov zgornje in spodnje prebavne cevi vključno z endoskopskim ultrazvokom in ERCP/ Simulations of invasive endoscopic procedures of the upper and lower digestive tract including endoscopic us and ERCP.

23. srečanje internistov in zdravnikov družinske medicine - Zbornik predavanj »Iz prakse za prakso« leto 2012: Simulacija ultrazvočnega pregleda trebuha s prenosnim abdominalnim »fonendoskopom«  
23rd annual meeting for internists and general practitioners – Collection of papers »Iz prakse za prakso« 2012:/ Simulation of ultrasound examination of the abdomen with a portable abdominal phonendoscope.

SKALICKY Marjan, LORBER Darja. Simulacija UZ pregleda s prenosnim abdominalnim fonendoskopom: [predavanje na 56. Srečanju Slovenskega združenja za gastroenterologijo in hepatologijo; Portorož, 12. In 13. Oktober 2012. V tisku.

SKALICKY Marjan, LORBER Darja. Simulacije endoskopskih invazivnih posegov zgornje in spodnje prebavne cevi vključno z EUZ in ERCP: [predavanje na 56. Srečanju Slovenskega združenja za gastroenterologijo in hepatologijo; Portorož, 12. In 13. Oktober 2012. V tisku.