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| | **UNIVERSITY OF EAST SARAJEVO**<br>Faculty of Medicine in Foca | |
| | ***Study program:medicine*** | |
| | Integrated academic studies / IV study year | |

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| **Full subject title** | INTERNAL MEDICINE |
| **Department** | Department for internal medicine, Faculty of Medicine in Foca |

| **Subject code** | **Subject status** | **Semester** | **ECTS** |
|---|---|---|---|
| ME-04-1-035-7; ME-04-1-035-8 | compulsory | VII and VIII | 28 |

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| **Professor/ -s** | Full professor Stevan Popovic, MD, PhD., Full professor Jelena Stanic, MD, PhD., Assistant professor Marijana Kovačević MD PhD, assistan professor Verica Prodanović MD, PhD, Assistant professor Mirjana Zlatković_Švenda |
| **Associate/ -s** | Senior ass., Sladjana Popovic, MD., Senior ass., Milica Kunarac., MD., Senior ass., Nikolina Dukic., MD., Senior ass., Jelena Vladicic Masic., MD., , Senior ass., Snezana Malis MD., senior ass., Olivera Cancar., Senior ass Srdjan Popovic., MD, Ass Ana Vladicic., MD., Ass Mirjana Radjen., MD. |

| **Number of lectures/ teaching workload (per week)** | | | **Individual student workload (in hours per semester)** | | | **Coefficient of student workload $S_o$[1]** |
|---|---|---|---|---|---|---|
| **L** | **E** | **SP** | **L** | **E** | **SP** | **$S_o$** |
| 3 | 8 | 2 | 3*15*0.79 | 8*15*0.79 | 2*15*0.79 | 0.79 |
| 7 | 8 | 3.33 | 7*15*0.79 | 815*0.79 | 3.33*15*0.79 | 0.79 |

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| total teaching workload (in hours, per semester)<br>3*15 + 8*15 + 2*15 = 195<br><br>7*15 + 8*15 + 3,33*15 = 275 | total student workload (in hours, per semester)<br>3*15*0.79 + 8*15*0.79 + 2*15*0.79 = 154<br><br>7*15*0.79 + 8*15*0.79 + 3,33*15*0.79 = 217,2 |

Total subject workload (teaching + student): 470 + 370 = 840 hours per semester

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| **Learning outcomes** | 1. Student should learn basic communication skills with patients, relatives of patients and colleagues, the principles of teamwork and basics about ethics.<br>2. Students need to learn how to take history and physical examination<br>3. During teaching process, students should acquire all necessary knowledge about the pathogenesis, clinical treatment of diseases and different conditions in adult population in all areas of Internal Medicine. Special attention is focused to the importance of preventive medical procedures.<br>4. During practical course students are introduced with clinical examination of patients, how to establish diagnosis. differential diagnostic procedures, ECG, X-ray images. They are also taught who to become familiar with the interpretation of the echo findings, endoscopic procedures, the abdominal, pleural and pericardial puncture, the basic principles of hemodialysis and peritoneal dialysis, the preparation of patients for transplantations and self-administration of the therapy. |
| **Preconditions** | Precondition for taking the exam is that students passed Special pharamacology and toxicology exam. |
| **Teaching methods** | Oral lectures and exercises, PBL sessions, case reports, phantoms, seminars, computer based softwares and consultations. |
| **Subject content per week** | **Lectures**<br>**Respiratory disease**<br><br>1. Respiratory function tests. (2 hrs)<br>2. Bronchial asthma. (2 hrs)<br>3. Chronic obstructive pulmonary disease. (2 hrs)<br>4 Pneumonia. (2 hrs),<br>5 Lung abscess, bronhiectasiae. (1 hr)<br>6. Pulmonary thromboembolism (1 hr)<br>7. Chronic pulmonary insufficiency. (1 hr). |

[1]The coefficient of student workload $S_o$ is calculated as it follows:
a) for the study programs not going through the licensing process: $S_o$ = (total workload in semester for all of the subjects 900 hrs – total teaching workload L+E in semester for all of the subjects 870 hrs)/ total teaching workload L+E in semester for all of the subjects _____ hrs = ____. Consult form content and its explanation.
b) for the study programs going through the licensing process, it is necessary to use form content and its explanation.

8. Chronic pulmonary heart. (1 hr),
9. Lung tumors, pleural and mediastinal tumors. (4 hrs)
10.Tuberculosis and lung fibrosis. The pathogenesis and immunology of tuberculosis. (2 hrs)
11. Primary tuberculosis. (1 hr)
12. Hematogenous, postprimary forms of tuberculosis. (1 hr). Post-bronchogenic forms of tuberculosis. (1 hr)
13. The treatment of tuberculosis (1 hr)
14. Tubeculosis in immunodeficient patients and mycobacteriosis. (2 hrs)
15. Granulomatous diseases of the lungs. (2 hrs)
16. Lung fibrosis. (2 hrs).

**Diseases of the heart and vascular disease**

17. Heart failure (3 hrs). Arterial hypertension. (3 hrs)
18. Cardiac valvular abnormalities. Rheumatic fever (4 hrs)
19. Acute myocardial infarction. Angina pectoris. (4 hrs)
20. Pericardial disease. Clinical forms of pulmonary hypertension.Congenital anomalies of the heart and major blood vessels. (3 hrs)
21. Infective endocarditis. Myocarditis. Miocardiopathia. (3 hrs)
22. Clinical symphtoms on the heart and blood vessels during other illnesses.
Heart rhythm disorders. (3 hrs)
24. Diseases of the aorta and peripheral arteries. Acute and Chronic pulmonary heart. (3 hrs)

**Diseases of the digestive system**

25. Diseases of the esophagus, stomach and duodenum. (4 hrs)
26. Diseases of the small intestine (4 hrs)
27 Disease of the large bowel (4 hrs)
28. Diseases of the pancreas (4 hrs)

**Diseases of the liver and bile ducts**

29. Hepatic failure (2 hrs)
30. Liver diseases (4 hrs )
31. Diseases of the biliary tree. (2 hrs)

**Malnutrition and metabolic disorders**

32. Appetite and regulation mechanism. (1 hr)
33 Obesity and malnutrition. (1 hr)
34. Hypoglycaemic syndrome. (1 hr)
35 Glicogenosis. Galactosemia. Renal glycosuria. (1 hr)
36 Lipids and lipoproteins-hyperlipoproteinemia. Divisioon of the diseases, clinical symptoms, lab. diagnosis, treatment. (2 hrs).

**Allergic and immunological diseases**

37. Clasification and general characteristics of immune diseases in the internal medicine. (2 hrs)
38. The basic principles of their prevention, and treatment of immune diseases. (2 hrs)
39. Allergic diseases caused by inhalatory allergens (allergic bronchial asthma, allergic bronchopulmonary aspergilosis, allergic bronhioalveolitis, Loffler's syndrome). (2 hrs)
40. Allergic diseases caused by food allergens (primary and secondary). (2 hrs)

**Diseases of the musculoskeletal system and connective tissue** diseases

41. Classification of Rheumatic Diseases. (1 hr)
42. Rheumatoid arthritis. Extra-articular manifestations of rheumatoid arthritis. (1 hr)
43. Ankylosing spondylitis. Enteropathic arthropathy. Reiter's syndrome. Psoriatic arthropathy, (1 hr),
44-Seronegative arthropathies. (1 hr)
45. Arthrosis peripheral joints. Degenerative diseases of the spine. (1 hr)
46. The lumbal and cervical syndrome. (1 hr)
47. Metabolic rheumatism (gout). (1 hr)
48 The infectious arthritis. extra-articular rheumatism (painful shoulder, enteropathy, fibrositis syndrome, slndrom vertices of the carpus) (1 hr)
49. Systemic lupus erythematosus (1 hr)
50. The progressive systemic sclerosis. Polymyositis. Polyarthritis. (1 hr)

**Diseases of the blood and blood-forming organs**

56. Anemia (sideropenic, megaloblastic, aplastic, anemia of chronic disease). (2 hrs)
57 hereditary and acquired hemolytic anemia. (2 hrs)

58 The chronic myeloproliferative diseases (chronic myeloid leukemia, PRV, essential thrombocythemia, osteom, general fibrosis). (2 hrs)
59 Acute leukemia (myeloblastic and lymhoblastic), (2 hrs)
60 Malignant lymphomas (Hodgkin M., Non Hodgkin lymphoma, multiple myeloma, chronic lymphocytic leukemia). (2 hrs)
61 Hemorrhagic syndromes (thrombocytopenia, coagulopathy, vasculopathy). (2 hrs).

**Diseases of the endocrine glands**
62. Clinical aspects of neuroendocrine regulation. (2 hrs)
63. Diseases of the pituitary gland. (2 hrs)
64 Hyperthyroidism. Hypothyroidism. (2 hrs)
65 Struma. thyroiditis, tumors of the thyroid and parathyroid glands. (2 hrs)
66. Diseases of the adrenal cortex. (2 hrs)
67 Hirsutism. Androgenital syndrom. Diseases of medulla of the adrenal glands.
Diseases of the gonads. (2 hrs)
68. Diabetes mellitus (ethiology, pathogenesis).
Clinic and diagnosis of diabetes mellitus (2 hrs)
69. Acute complications of diabetes mellitus.
Chronic complications of diabetes mellitus. (2 hrs)
70. The treatment of diabetes mellitus. (2 hrs)

**Kidney and urinary tract**
71. Diagnosis of kidney disease. (2 hrs),
72. Acute renal failure (2 hrs)
73 Chronic renal failure. (2 hrs)
74. Replacement therapy in case of renal faillure (the basic principles of dialysis, peritoneal dialysis, renal transplantation) (2 hrs).
74. Glomerular disease. (2 hrs)
75 Tubolointerstitial nephropathy. (2 hrs). Urinary-tract infections. (2 hrs)
77 Endemic nephropathy. (1 hr). Diabetic nephropathy (1 hr).
76. Vascular renal disease. (2 hrs)
78 Nefrolithiasis (1 hr)

**Exercises**

**RESPIRATORY DISORDERS**
1. Introduction to pulmonary function test (spirometry, flow-volume curve, and plethysmography. Lung transfer factor, pharmacodynamic tests, arterial blood gas analysi) (5 hrs).
2. The clinical evaluation and treatment of patients with chronic opstructive lung disease (bronchial asthma, chronic bronchitis, emphysema), (5 hrs)
3. The clinical evaluation and treatment of patients with inflammatory respiratory diseases (pneumonia, lung abscess, brohiectasis, pleuritis) . (5 hrs)
4.Clinical evaluation, control and therapy of patients with chronic respiratory failure and chronic pulmonary heart. (5 hrs).
5.Evaluation of patients with bronchial, pleural tumors and umors of the mediastinum (radiographic image pulmonary tests, invasive diagnostic methods) and therapeutic methods (5 hrs)

**Tuberculosis and lung fibrosis.**
6. Introduction to tuberculin tets (Alt-tuberculin, PPD. The practical application of the tuberculin test. Getting basic information about BCG vaccin and its application. Radiological diagnosis of primary tuberculosis. (4 hrs)
7.The clinical evaluation and treatment of patients with post-primary tuberculosis. (hematogenous, bronchogenic, and fibrous forms). Introduction to the epidemiology of a tuberculosis (5 hrs)
8. The clinical evaluation and treatment of patients with resistant tuberculosis. Evaluation and therapy of patients with pulmonary sarcoidosis and pulmonary fibrosis (5 hrs)

**Diseases of the heart and blood vessels**
9. The clinical evaluation and treatment of patients with different forms of heart failure. The importance of non-invasive and invasive methods in detecting ethiology of cardiac failure. (5 hrs)
10 The clinical evaluation and treatment of patients with valvular heart disease.
Diagnosis and treatment of complications in patients with artificial heart valves. (5 hrs)
11. Coronary heart disease. Treatment of Patients with stable and unstable angina pectoris. Importance of invasive and non-invasive diganostic procedures in patients with angina pectoris (5 hrs).

12. Coronary artery disease. Treatment and therapy of patients with acute myocardial infarction. (5 hrs)
13 The clinical evaluation and treatment of patients with arterial hipertension. (5 hrs)
14 The clinical evaluation and treatment of patients with acute myocard disease. Diagnostics and therapy of primary cardiomyopathies. The clinical evaluation of patients with perikarditis. The clinical evaluation and treatment of patients with infective endocarditis. (5 hrs)
15 The clinical evaluation and treatment of patients with acute and chronic pulmonary heart (5 hrs). isease.

**Diseases of the digestive tract**

16. Introduction to the general diganostic principles in gastroenterology
Characteristics of history and physical examination. Introduction with the general principles of endoscopy (diagnostic and interventional and video endoscopy) (4 hrs)
17 Clinical examination and treatment of patients with acute and chronic gastritis (chronic atrophic gastritis, pernicious anemia, Menetrier disease and eosinophilic gastritis). Introduction to the morphological characteristics of the gastric mucosa. Introduction with macroparticular biopsies (4 hrs)
18. Clinical examination and treatment of patients with esophageal disease (
reflux disease of the esophagus, esophageal varices, esophageal carcinomas) Introduction of the endoscopy and pH manometry of esophagus (4 hrs)
19. Clinical examination and treatment of patients with disease ( acute and chronic gastritis, gastric ulcer, benign and malignant tumors of the stomach).
Introduction to the functional study of secretion of HCl-BAO, MAO, PAO provocative tests). Introduction to diagnostic and therapeutic endoscopy of the stomach. (4 hrs)
20. A clinical examination of patients with diseases of the small intestine (malabsorption syndrome, celiac disease, tumors of the small intestine). Introduction to the method of the insertion of the duodenal tube. Diagnostic endoscopy of the small bowel. Introduction to histological diagnosis of diseases of the small intestine. Functional testing of digestion and absorption. (4 hrs)
21 A clinical examination of patients with different disease of the colon (ulcerative colitis.
M. Krohn, benign and malignant tumors of the colon, parasitosis). Introduction to rigid and flexible endoscopy. Functional testing of the colon and testing of the stoolg for acute bleeding. (4 hrs)
22. A clinical examination of patients with acute and chronic pancreatitis (biliary, alcohol, idiopathic). Introduction to studnets with morphological examination of the pancreas (ERCP). Introduction to endoscopic therapeutic procedures (EPT). Functional assays for testing pancreatic secretion. (4 hrs)

**Diseases of the liver and bile ducts**

23. Case report of the patient with hepatic failure. Hepatic encephalopathy and coma.
Laboratory analysis as an indicator of hepatic insufficiency. Division of the jaundice on intrahepatic and extrahepatic. The importance of visualization of intrahepatic billary tree. Analysis of the place where bile was possibly stooped in the biliary tree. Type of jaundice with emphasis on congenital hyperbilirubinemia. (4 hrs)
24. Etiology of the acute hepatitis (A, B, and C virus). Report about patients with acute hepatitis. Pointing out differences in the clinical picture between A and B hepatitis. The way of expressing the toxic effects of drugs: necrosis, cholestasis, fibrosis, hypersensitivity. clinical picture. (4 hrs)
25. Report about patients with chronic hepatitis. Palpation of the liver and spleen. Review about the possible etiology. Cirrhosis of the liver as the final stage of liver disease. Interpretation of hypersplenism through analysis peripheral blood picture. (4 hrs)
26. Portal hypertension as the most important complication of cirrhosis of the liver. The development of the collateral blood vessels with upper and lower vena cava. Esophageal varices.
The risk of bleeding. Stopping the bleeding. Demonstration Blackmor tube. Ascites. Benign tumors of the liver-hemangiomas and cysts.
27.Insisting on good general condition of the patient and normal laboratory.
The differential diagnosis to echinococcosis (fluorescent antibody to Hydatid cyst, Botteri test). Primary malignant tumors. Case reports. The importance of guided biopsies. Tumors. (4 hrs)
27 The clinical picture of cholelithiasis-anamnesis, pain localization and radiation. Murphy's point. The importance of proper diet. Case report of the patient with calculosis. The clinical picture of the patient with the tumor of the bile tree tree and vater ampulla . Case reports. Differential diagnosis of obstructive jaundice. (4 hrs)

**Malnutrition and metabolic disorders**

28. Calculating BMI, assessing the type of obesity (androgens, gynoid). Metabolic difference. Assessing the degree of malnutrition, treatment of patients with anorexia nervosa and bulimia. (4 hrs)
29 Treatment of patients with various forms of hypoglycemia, the diagnostic possibilities for determining the nature of hypoglycaemia. Emergency and chronic treatment of hypoglycemia. Differential diagnosis of glycosuria. (4 hrs)

30 Establishing diagnosis of hyperlipoproteinemia. Determining the type of hyperlipoproteinemia accroding to Fedricksonu. Refrigerator test-performance and interpretation. The distinction between primary and secondary hyperlipoproteinemia. Diet for certain types of hyperlipoproteinemia. (4 hrs)

**Allergic and immunological diseases**

31. Introduction to the in vivo tests (skin tests, dossage provocative assays, bronchial provocation tests and rhinoprovocation tests. (4 hrs)
32. The clinical evaluation and treatment of patients with immune diseases (systemic lupus erythematosus, polymyositis, dermatomyositis, scleroderma, rheumatoid arthritis, Sjogrenov syndrome, autoimmune cytopenias, autoimmune thyroiditis, Addison's disease, lupoid hepatitis, ulcerative colitis, Goodpasterov syndrome). (4 hrs)
33 The clinical evaluation and treatment of patients with allergic diseases caused by inhalatory allergens (allergic bronchial asthma, allergic bronchopulmonary aspergillosis, allergic bronhioalveolitis, Loffler's syndrome). (4 hrs)
34. The clinical evaluation and treatment of patients with drug induced allergic diseases(with an emphasis on the penicillin and aspirin). The clinical evaluation of the patients with allergic diseases caused by food allergens (primary and secondary). (4 hrs)

**Diseases of the locomotor system and connective tissues.**

35. Introduction to the clinical picture of rheumatoid arthritis. Clinical evaluation and treatment of patients with rheumatoid arthritis. Establishing diagnosis of the extraarticular manifestations. Evacuation of the synovial fluid and the local administration of glucocorticoids. Control of the treatment. (4 hrs)
36. The clinical evaluation and treatment of patients with seronegative arthropathies (ankylosing spondylitis, Reiter's syndrome, psoriatic arthritis, enteropathic arthropathy). (4 hrs)
37 The clinical evaluation and treatment of patients with osteoarthritis of the peripheral joints. The clinical evaluation and treatment of patients with cervical and low back pain. EMG diagnostic of radicular lesions. (4 hrs)
38 The clinical evaluation and treatment of metabolic arthropathy and infectious arthritis.
Analyzes synovial liquids. The clinical evaluation and treatment of non-articular rheumatism. Information about local infiltration technique with steroides. (4 hrs)
39. Clinical evaluation and treatment of systemic connective tissue diseases (systemic lupus erithematosus, progressive systemic sclerosis, polymyositis, polyarteritis).
Information about immunological tests for establishing diagnosis and following up patients with systemic connective tissue diseases. (4 hrs)

**Diseases of the blood and blood-forming organs**

40. The clinical evaluation of patients with anemia using microscop. (4 hrs)
41. The clinical evaluation of patients with hereditary and acquired anemia using microscope and introduction of diagnostic assays. (4 hrs)
42. The clinical evaluation of patients with chronic myeloproliferative diseases and familiarization with cytogenetic analyzes necessary for diagnosis. (4 hrs)
43 The clinical evaluation of patients with acute leukemia. Treatment and microscopic diagnostics. (4 hrs)
44 The clinical evaluation of patients with malignant lymphomas, multiple myeloma and B-cell chronic lymphocytic leukemia using microscope for their detection. (4 hrs)
45. The clinical evaluation of patients with hemorrhagic syndromes with the introduction of the haemostasis tests necessary for their diagnosis. (4 hrs)

**Diseases of the glands with internal secretion**

46. Introduction to the general principles of diagnostics in endocrinology, specific aspects of the anamnesis and physical examination. Special features of the laboratory analysis and other diagnostic procedures. Principles of dynamic tests used for studying endocrine functions. (3 hrs)
47 The clinical evaluation, diagnosis and treatment of patients with impaired function of the hypothalamic and pituitary gland. Tumors of the pituitary gland. Diabetes insipidus.Hypopituitarism. Therapuetical principles. (3 hrs).
48. The clinical evaluation, diagnostic methods and treatment of the thyroid gland.
Special treatment of patients with Graves-Basedow disease. (3 hrs)
49 Struma. Special treatment of nodular goiter. Differential diagnosis of nodular goiter. Thyroiditis. Malignant tumors of the thyroid gland. (3 hrs)
50 The clinical evaluation, diagnosis and treatment of patients with increased and decreased function of the cortex of the adrenal glands. Special treatment of patients with Cushing's syndrome and Addison's disease. (3 hrs).

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| | 51. The clinical evaluation of patients, difrential diagnosis and treatment of ovarian disorders. Special treatment of polycystic ovary syndrome, Klinefelter and Turner's syndrome. (3 hrs)<br>52 The clinical evaluation, diagnosis and treatment of insulin-dependent and non-insulin-dependent diabetes. Principles of diet. (3 hrs)<br>53. Presentation of patients with acute diabetic complication. Treatment of patients with chronic diabetic complications. (3 hrs)<br>54. The clinical evaluation, the differential diagnosis and treatment of metabolic bone diseases. Disruption of growth and development. (3 hrs).<br><br>**Diseases of the kidney and urinary tract**<br>55. The clinical evaluation of patients sent to hospital for assessment of renal function.<br>Calculating creatinine clearance, tubular excretion of various substances, the interpretation of isotopic, ultrasound and Rtg findings. (3 hrs).<br>56. The clinical evaluation and treatment of patients with acute renal insufficiency (differential diagnosis.prerenal and renal ABI). (3 hrs).<br>57. The clinical evaluation and treatment of patients with chronic renal insufficiency. Introduction with hemodialysis, peritoneal dialysis and kidney transplantation (4 hrs)<br>58. The clinical evaluation of patients with glomerular diseases, with particular emphasis on the differential diagnosis and treatment of primary and secondary glomerular disease. (3 hrs)<br>59 The clinical evaluation and treatment of patients with tubulointerstitial diseases (urinary-tract infections, endemic nephropathy). (3 hrs)<br>60 The clinical evaluation and treatment of patients with vascular diseases of the kidney. (3 hrs)<br>61 Work in cabinet for nephrological diseases, in ultrasound cabinet and nephrological counseling center for patients with diabetes and hypertension (4 hrs). |

| **Compulsory literature** | | | |
|---|---|---|---|
| **Author/s** | **Publication title, Publisher** | **Year** | **Pages (from-to)** |
| Longo DL, Fauci AS, Kasper DI | Harrison's Principles of Internal Medicine, 19 th ed McGraw-Hill | 2015 | |
| **Additional literature** | | | |
| **Author/s** | **Publication title, Publisher** | **Year** | **Pages (from-to)** |
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| | **Grading policy** | **Points** | **Percentage** |
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| **Student responsibilities, types of student assessment and grading** | Pre-exam activities | | |
| | lecture/exercise attendance | 20 | 20% |
| | Case report-work in groups | 10 | 10% |
| | Practical work | 20 | 20% |
| | Final exam | | |
| | practical exam | 25 | 25% |
| | Written exam | 25 | 25% |
| | Total | 100 | 100 % |
| **Certification date** | December 13 th 2018 | | |

* the number of necessary rows is added by using *insert mode*