

**INTERNAL MEDICINE****GENERAL INFORMATION**

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Study Programme	Integrated undergraduate and graduate university study of Medicine
Status of the course	Mandatory
Year of study, semester	4 <sup>th</sup> year; 7 <sup>th</sup> semester

ECTS	<b>20</b>
Workload (hours)	Lectures (68); Seminars (111); Exercises (210)
Expected number of students	70
<b>COURSE DESCRIPTION</b>	
<b>Course objectives</b>	
To learn about symptoms, diseases and syndromes, their occurrence, causes, diagnostic algorithms, prognosis, prevention, and treatment. Get to know, understand, and set the indication for therapy, independently decide on the time and type of diagnostic examination and treatment of disorders, and independently interpret them. The goal is to train the student and provide them with the basic knowledge that will enable them to connect the clinical picture and clinical status of the patient with the aetiology of the disease, diagnostic tests and treatment planning and follow-up. Furthermore, students will learn to interpret laboratory findings and ECG. At the end of the class, students can independently determine diagnostic tests and analyse them, as well as treat emergency conditions and the most common diseases in internal medicine.	
<b>Enrolment requirements and entry competencies</b>	
Passed exams totalling 51 ECTS points in the previous academic year.	
<b>Learning outcomes at the Programme level</b>	
<b>1.2., 2.1., 2.2., 2.3., 3.1., 3.2., 3.3., 3.4., 3.5., 4.1., 4.2.</b>	
<b>Learning outcomes (5-10)</b>	
<p>KNOWLEDGE</p> <ol style="list-style-type: none"> <li>1. Classify, define, describe, and differentiate individual diseases of internal organs as unique clinical entities.</li> <li>2. Describe the leading symptoms and signs of diseases of the internal organs and connect them to specific clinical pictures and syndromes and interpret the basic development of pathophysiological mechanisms of the most important clinical entities.</li> <li>3. Present differential - diagnostic possibilities based on clinical symptoms and signs in patients.</li> <li>4. Plan and select diagnostic procedures for certain conditions, syndromes and diseases of internal organs and to critically judging the results of diagnostic tests.</li> <li>5. Connect and integrate knowledge from the clinical picture and diagnostic procedure and critically judging the diagnosis of diseases of internal organs.</li> <li>6. Distinguish the basic principles of treatment and plan the optimal type and sequence of therapeutic procedures.</li> <li>7. Critically judging different invasive and non-invasive methods of treatment of certain diseases and presenting them to the patient in an argumentative manner.</li> <li>8. Analyse the course of the disease, the effects, and the outcomes of the treatment, and predict the appropriate prognosis of the disease.</li> <li>9. Recognize diagnostic and treatment methods in accordance with the principles of "evidence based medicine".</li> </ol> <p>SKILLS</p> <ol style="list-style-type: none"> <li>1. Demonstrate the skill of independent medical history taking and clinical performance by examining patients with diseases of the internal organs and determining the working diagnosis.</li> <li>2. Observe and recognize the leading symptoms of diseases of the internal organs and the association of these symptoms with certain clinical entities.</li> <li>3. Recognize symptoms in a critically ill patient and present critical care skills.</li> </ol>	

4. To develop the skill of discussing the clinical picture and interpreting the differential diagnosis.
5. Develop the skill of interpreting and discussing the results of diagnostic tests.
6. Independently perform certain clinical skills in accordance with the Clinical Skills Booklet.
7. Perform, under supervision, an appropriate number of different diagnostic and therapeutic procedures in accordance with the Clinical Skills Booklet.
8. Present the method of managing diagnostic and therapeutic procedures and supervising patients in accordance with the appropriate procedures (algorithms).
9. Manage the patient's medical documentation.
10. Participate in team, interdisciplinary and multidisciplinary clinical work and demonstrate effective communication skills with the patient, his family, and medical workers

#### Course content

##### **CARDIOLOGY**

**Lectures:** Clinical approach to the cardiac patient. Heart failure syndrome. Heart rhythm disorders. Basics of electrostimulation. Valvular heart diseases. Congenital heart diseases in adults. Inflammatory heart diseases. Cardiomyopathies. Coronary disease. Invasive procedures in cardiology. Diseases of the aorta and peripheral arteries. Deep vein thrombosis and pulmonary thromboembolism.

**Seminars:** Basics of electrocardiogram interpretation: normal ECG. Basics of electrocardiogram interpretation: pathological ECG. Pulmonary oedema and cardiogenic shock (diagnostic-therapeutic approach, clinical presentation). Antiarrhythmics, electro cardioversion and defibrillation. Permanent and new-onset atrial fibrillation (diagnostic and therapeutic approach, case report). Malignant heart rhythm disorders (diagnostic and therapeutic approach, case report). Sudden cardiac death - causes and prevention. Aortic and mitral valve diseases. Invasive cardiology in valvular heart disease. Myocarditis and dilated cardiomyopathy (cause and effect relationships, therapeutic management). Non-invasive diagnosis of coronary disease - presentation of methods and interpretation of results. Percutaneous coronary intervention in the treatment of STEMI infarction (case report). Conservative management of acute coronary syndrome (fibrinolytic, anticoagulant, and antiplatelet therapy). Clinical approach to patients with acute coronary syndrome. Deep vein thrombosis (diagnostic and therapeutic approach, case report). Treatment of patients with recurrent thromboembolic incidents. Heart disease in pregnancy. Indications and diagnostic approach in heart transplantation. Physical rehabilitation of cardiovascular patients. Primary and secondary prevention of cardiovascular diseases.

**Exercises:** approach to a patient with heart disease, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

##### **PULMONOLOGY**

**Lectures:** Clinical approach to the pulmonology patient. Acute pneumonia. Pulmonary tuberculosis. Asthma and COPD. Interstitial lung diseases. Lung cancer. Pleural disorders. Respiratory insufficiency.

**Seminars:** Interpretation of spirometry results. Anomalies of the development of respiratory organs and chest.

Domiciliary pneumonia (diagnostic-therapeutic approach). Hospital acquired pneumonia (diagnostic-therapeutic approach). Rational use of antibiotics in pneumonia. Bronchiectasis and lung abscesses. Exacerbation of COPD (diagnostic-therapeutic approach, case report). Severe asthma (diagnostic-therapeutic approach, case report). Disorders of ventilation. Diffuse alveolar haemorrhage (differential-diagnostic approach). Pulmonary eosinophilia. Occupational lung diseases. Diseases of the mediastinum and otitis media. Treatment of small and non-small cell lung cancer. Pulmonary rehabilitation. Lung transplantation (indications for and treatment).

**Exercises:** approach to a pulmonology patient, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **HEMATOLOGY**

**Lectures:** Clinical approach to the patient with haematologic disorders. Classification, diagnostic approach, and treatments of anaemia. Chronic myeloproliferative diseases. Myelodysplasia and acute leukaemia syndrome. Lymphoproliferative diseases. Neoplastic diseases of plasma cells. Platelet diseases and hereditary coagulation disorders. Basic principles of blood transfusion.

**Seminars:** Clinical approach to the patient with sideropenic anaemia. Haemolytic uremic syndrome and thrombotic thrombocytopenic purpura. Disseminated intravascular coagulopathy. Neutrophilia and neutropenia. Approaching the patient with lymphadenopathy. Splenomegaly and hypersplenism. Hereditary and acquired thrombophilia's. Hematopoietic cell transplantation. Clinical presentation of a patient with non-Hodgkin's lymphoma. Clinical presentation of a patient with Hodgkin's lymphoma. Management of massive bleeding. Indications for treatment with blood products, transfusion reactions.

**Exercises:** approach to a patient with haematologic disorders, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **GASTROENTEROLOGY**

**Lectures:** Clinical approach to the patient with gastrointestinal disorders. Gastrointestinal bleeding. GERD and other diseases of the oesophagus. Peptic ulcer disease and gastritis. Idiopathic inflammatory bowel diseases. Carcinoma of the oesophagus, stomach, and intestines. Viral hepatitis and toxic liver diseases. Alcoholic liver disease. Liver cirrhosis and its complications. Gallbladder and bile duct diseases. Hepatobiliary cancers. Pancreatic inflammation and cancers.

**Seminars:** Approach to patients with elevated transaminase. Diarrhoea and constipation. Irritable bowel syndrome and functional dyspepsia. The most common malabsorption syndromes. Treatment of patients with melena and hematemesis. Bleeding ulcer (diagnostic-therapeutic approach; case report). Treatment of patients with acute abdomen. Diverticulosis and megacolon. Biological therapy and IBD (presentation of patients on biological therapy). Diagnosis and treatment of clostridial enterocolitis and food poisoning. Non-alcoholic fatty liver disease (NAFLD). Clinical approach to patients with hyperbilirubinemia. Decompensated cirrhosis (therapeutic approach, clinical presentation). Liver transplantation (indication and treatment). Extracorporeal methods of liver failure treatment. Necrotizing pancreatitis and MODS (diagnostic and therapeutic approach).

**Exercises:** approach to a patient with gastrointestinal disorders, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **NEPHROLOGY**

**Lectures:** Clinical approach to the patient with kidney diseases. Acute kidney injury. Chronic kidney disease. Renal replacement therapy. Glomerular diseases. Tubulointerstitial diseases. Urinary tract infections and nephrolithiasis. Arterial hypertension.

**Seminars:** Differential diagnosis of nephrotic syndrome. Differential diagnosis of nephritic syndrome. Conservative management of acute kidney injury, case report.

Urgent renal replacement therapy in the treatment of acute kidney injury, case report. Intermittent haemodialysis, case report. Vascular kidney diseases. Cystic kidney disease. Cancers of the urinary system. Indications and pre-transplant management. Immunosuppressive therapy in transplant patients. Urosepsis, case report. Management of patients with suspected secondary hypertension.

**Exercises:** approach to a patient with kidney, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **RHEUMATOLOGY**

**Lectures:** Allergic and pseudo-allergic reactions. Rheumatoid arthritis. Seronegative spondylarthritis. Systemic lupus erythematosus. Systemic sclerosis, Sjogren's syndrome and dermatomyositis. Vasculitis syndrome.

**Seminars:** Primary and secondary immunodeficiencies. Pathophysiology of autoimmune diseases. Disorders of the complement system, immune complex diseases. Management of urticaria, angioedema and anaphylaxis, case report. Hereditary angioedema, recognition, and treatment. Connective tissue disorders, overlap syndrome. Sarcoidosis and amyloidosis. Osteoarthritis. Infectious arthritis. Uric arthropathy, gout. Biological therapy in rheumatology. Behcet's disease.

**Exercises:** approach to a patient with rheumatological disorders, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **ENDOCRINOLOGY**

**Lectures:** Diabetes. Thyroid diseases. Diseases of the hypothalamic- pituitary-adrenal axis. Diseases of the adrenal glands. Diseases of the parathyroid glands. Osteoporosis.

**Seminars:** Acute complications of diabetes. Chronic complications of diabetes. Hyperlipoproteinemia. Anorexia. Adipositas. Gonadal disorders. Other endocrine cancers. Endocrine emergencies. Diagnosis, therapy, and prevention of osteoporosis.

**Exercises:** approach to a patient with endocrine disorders, clinical picture, interpretation of laboratory results, diagnostic processing and treatment.

#### **INTENSIVE CARE MEDICINE**

**Lectures:** Cardiopulmonary resuscitation. Acute respiratory failure. Haemorrhagic collapse (shock). Sepsis and septic shock.

**Seminars:** Fundamentals of mechanical ventilation. Basic and advanced life support, airway management. Clinical use of vasoactive drugs. Approach to the unconscious patient. Multiple organ dysfunction syndrome. Sudden electrolyte imbalance. Disorders of Acid-base balance.

**Exercises:** approach to a critically ill patient, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **CLINICAL PHARMACOLOGY**

**Lectures:** Drug intoxication. Other intoxications.

**Seminars:** Side effects and drug interactions. Drugs during pregnancy and breastfeeding. Drugs in the treatment of target organ damage. Approach to the poisoned patient.

**Exercises:** approach to the patient, clinical picture, interpretation of laboratory results, diagnostic processing, and treatment.

#### **Mode of teaching**

Lectures, Seminars; Exercises

#### **Student obligations**

Students are expected to attend all class sessions, as well as to take all the examinations. However, they are allowed for excused absences, totalling 30% of all classes.

#### **Monitoring student work (alignment of learning outcomes, teaching methods, and grading)**

Teaching methods	ECTS	Learning outcomes	Student activities	Assessment methods	Evaluation points	
					Min.	Max.
Attending all class sessions (Lectures, Seminars, Exercises)	0	1-19	Classroom presence	Proof of presence	0	0

Lectures	0	1-9	Classroom presence	Proof of presence	0	0
Seminars	3,5	1-9	Preparation of seminar, quality of work topic by engaging with key issues	Point evaluation	4	15
Exercises (Attending, the practice diary)	4,5	10-19	An active attendance, participation in preparations, acquisition of competency in clinical skills, writing diary entries	Practice diary	10	25
Writing exam	4	1-9	Exam preparation	Writing exam	12	20
Practical exam	4	10-19		Practical exam	12	20
Oral exam	4	1-9		Oral exam	12	20
<b>Total</b>	<b>20</b>					<b>50</b>

Final exam:

Students who have properly completed all forms of teaching acquire the right to take the final exam. The final exam is mandatory and consists of a written sheet, a practical exam, and an oral exam. A negative score from any part of the exam implies a negative score on the final exam.

The written exam consists of forty questions with five answers, of which only one is correct. The minimum criterion for obtaining evaluation points is 60% of correctly solved questions.

Evaluation/grading of the final written examination:

Percentage of correct answers (%), evaluation points	Grade points	Grade
0-59,99 % 0-23 points	0 – 11,5	Insufficient (1)
60,00-69,99 % 24-27 points	12 – 13,5	Sufficient (2)
70,00-79,99 % 28-31 points	14 – 15,5	Good (3)
80,00-89,99 % 32-35 points	16 – 17,5	Very good (4)
90,00-100 % 36-40 points	18 - 20	Excellent (5)

The practical exam consists of an examination of the patient (medical history and clinical examination), an interpretation of laboratory findings and an interpretation of the electrocardiogram (ECG).

The oral exam consists of 7 questions from the different fields of internal medicine (a set of question cards).

Evaluation of practical and oral parts of exam:

12-13,5 grade points, sufficient (2): the minimum pass grade

14-15,5 grade points, good (3): an average with noticeable mistakes

16-17,5 grade points, very good (4): very good with slight mistakes

18-20 grade points, excellent (5): exceptional

*Calculation of final grade:*

Based on the total sum of the points awarded during the course and the final exam. The final grade is done by absolute distribution, ie based on the final achievement and is compared with the numerical grading systems as follows:

A – excellent (5): 80-100 grade points; B – very good (4): 70-79,99 grade points; C – good (3): 60-69,99 grade points; D – sufficient (2): 50-59,99 grade points

#### **Required reading (available in the library and through other media)**

Title	Number of copies in the library	Availability through other media
1. Mihić D, Mirat J, Včev A i sur. Interna medicina. 1. Izdanje. Osijek: Studio HS internet d.o.o.; 2021.	15	
2. Čustović F. Anamneza i fizikalni pregled. Zagreb: Školska knjiga; 2000.	2	
3. Metelko Ž, Harambašić H (ur). Internistička propedeutika i osnove fizikalne dijagnostike. Zagreb: Medicinska naklada; 1999.	6	

#### **Additional reading**

1. Vrhovac B i sur. Interna Medicina, 4. izdanje. Zagreb: Naklada Ljevak; 2008.

2. Antonin B. Propedeutika interne medicine. Zagreb: Jumena; 1989.

3. Bergovec M. Praktična elektrokardiografija. Zagreb: Školska knjiga; 1998.

4. Barić Lj i sur. Elektrokardiogram u praksi. Zagreb: Lek; 2003.

#### **Course evaluation procedures**

Anonymous, quantitative, standardized student survey providing feedback on the course as well as on the work of course coordinators and their assistants/associates is being conducted by the QA Office of the Faculty of medicine Osijek.

#### **Note /Other**

E-learning does not count towards course contact hours, but is being used in teaching and comprises links to various web pages, as well as video and audio materials available on web pages.