

University of Medicine and Pharmacy  
“Iuliu Hațieganu” Cluj-Napoca  
Faculty of Medicine

# **ECTS Study Guide**

Academic year 2021 – 2022

Cluj-Napoca  
2021

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CLUJ-NAPOCA

**ECTS STUDY GUIDE**  
**FACULTATEA DE MEDICINĂ**

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## DEAN'S INTRODUCTION

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For more than 140 years, the Faculty of Medicine of Cluj-Napoca has educated numerous generations of valuable physicians, devoted to their profession and their patients. Our faculty represents a brand of our city, and the community we serve recognizes the endeavor and commitment of teachers, graduates and students alike.

You will find in the Faculty of Medicine in Cluj great learning and research opportunities. The developments of last decade have led to European and international integration and recognition of our faculty. Currently, the Faculty of Medicine has been awarded Label CIDMEF, the quality certificate released by the International Conference of the Deans of French Language Speaking Medical Schools, is accredited by European Association of Medical Schools AMSE, and the diplomas are fully recognized by the State of Israel.

The medical school in Cluj is modern, dynamic, and is distinguished from other medical schools by an attractive educational offer: four undergraduate study programs, twelve master programs, a remarkable doctoral school and all the residency specialties. The management team's mission is the continuous increase in the quality of the didactic act and implicitly of the medical act. As an additional advantage of our school, we can mention the fact that the Faculty of Medicine in Cluj is among the few institutions in the world that offer a study program in three languages, namely medicine in Romanian, English and French. Currently, more than 2500 international students are enrolled in the study program Medicine of our faculty.

Internationalization represents a prominent component of our medical school, more important than ever, as major challenges of our times require international solutions. Studying abroad gives you the wonderful opportunity to live in a multicultural environment, to expand your horizon, to meet colleagues who may inspire you.

The hereby guide offers you information about medical studies in the Faculty of Medicine in Cluj, namely the structure of the academic year, the content of the disciplines, examination, mandatory and optional references, and more.

We all, teachers and students, invite you to discover us!

**Dean,**  
**Professor Șoimița Mihaela Suciu, MD, PhD**

## A BRIEF HISTORY OF THE FACULTY OF MEDICINE

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Founded in Cluj, 146 years ago, at the "Franz Josef" University, Transylvania's medical higher education has a long and valuable tradition. The Romanian study program of the Faculty of Medicine in Cluj was founded in 1919, within the "Dacia Higher University".

Its first dean was Iuliu Hațieganu, who founded the Transylvanian internal medicine school and contributed decisively to the fast development of the young academic institution as a whole. The faculty has quickly gained wide national recognition and international reputation through the work of professors of great prestige, such as Victor Babeș, Constantin Levaditi, Iacob Iacobovici, Iuliu Moldovan, Victor Papilian, who remain in history under the name of the "Golden Generation". The second interwar decade was marked by remarkable personalities of medicine, such as Valeriu Bologna, Leon Daniello, Ion Manta and Grigore Benetato. The departments of Medical Semiology, under the direction of Ion Goia (1930), and Balneology, under the direction of Marius Sturza (1930), were created for the first time in Romania. For a decade (1930-1940), Emil Racovita - who was at that time a professor at the Faculty of Sciences of the "King Ferdinand" University of Cluj - held the biology and genetics courses for the medical students.

The Faculty underwent great difficulty during the Second World War when the University was relocated in Sibiu (1940-1945). Despite these hardships, through the care and competence of Iuliu Hațieganu, the Rector of the University (1941-1945), of Victor Papilian, who was the Dean of Medicine (1940-1944) and through the enthusiastic support of the academic staff, the activity continued at high quality standards.

After returning to Cluj and following the education reform in 1948, the Faculty of Medicine was separated from the University and became the Medical-Pharmaceutical Institute. During the post-war years, despite hardships that affected the entire Romanian higher education system, the Faculty of Medicine continued to give to society valuable people such as Octavian Fodor, Aurel Moga, Aurel Chișu, Aurel Nana, Ion Chiricuță, Constantin Velluda, Victor Preda, Ion Baci, personalities who influenced the Romanian medical education as a whole.

In its early years, the faculty took over everything that was innovator in the prestigious medicine schools in Europe. During the long period of the communist regime, the faculty was given the chance to have leaders and teachers who knew how to preserve the original values of the medical school, so that the tradition of professional and humanistic performance was not lost.

In 1990, the Medical-Pharmaceutical Institute was transformed into the University of Medicine and Pharmacy, which had three Faculties: Medicine,

Dental Medicine and Pharmacy. Since 1992, the university has been named after the illustrious founder of the Romanian School of Medicine in Cluj, Iuliu Hațieganu. It was during these years of enthusiastic activity that the difficult process of modernizing the University and the Faculty of Medicine was initiated, a process that has lately led to European integration and recognition of the medical education of Cluj.

### I. ACADEMIC MANAGEMENT

#### **The Senate**

The highest governing body of "Iuliu Hațieganu" University of Medicine and Pharmacy is the Senate. The Chairman of the Senate represents the Senate in relation to the Administration Council and the Rector of the university and heads the Senate meetings.

The principles governing the organization and functioning of the university, as well as the rules governing the activity of the academic community are laid down in the Charter of the University, adopted by the Senate.

#### **The Administration Council**

The Administration Council consists of the Rector, the Vice-Rectors, the Deans, the General Director of Administration and the students' representative and is in charge of the executive direction of the university. The head of the Administration Council is the Rector.

The Senate, The Administration Council and the Rector make decisions on the main issues of the educational process, decisions based on the university autonomy and the respect for academic freedom, and on the provisions of the Ministry of National Education. The Senate consists of academic staff members and 25% students' representatives.

#### **The Council of the Faculty of Medicine**

The Council is the highest management board of the Faculty of Medicine and has 30 teaching staff and 10 students. The representatives of foreign students and resident physicians are invited mandatorily to participate to the Council meetings. The Faculty Council is chaired by the Dean of the faculty.

The decisions of the Council are carried out by the dean of the Faculty and by the 5 Vice-Deans. The Dean has the responsibility of the entire activity of the Faculty and represents the Faculty within and outside the university, coordinates the activity and follows the application of the decisions of the Faculty council.

The activity of the faculty's academic leadership team is supported by an administrative team headed by the chief secretary of the faculty.

The direction of the University of Medicine and Pharmacy "Iuliu Hațieganu" was elected in December 2019 for a four-year term and it is represented by the following teachers:

## **The direction of the University of Medicine and Pharmacy “Iuliu Hațieganu”**

Prof. <b>Anca Dana Buzoianu</b> , MD, PhD	- Rector
Prof. <b>Valentin Munteanu</b> , MD, PhD	- President of the Senate
Assoc. Prof. <b>George Călin Dindelegan</b> , MD, PhD	- Vice-Rector, resident and postgraduate students
Prof. <b>Carmen Mihaela Mihu</b> , MD, PhD	- Vice-Rector, Didactic Activities
Prof. <b>Daniel Mureșan</b> , MD, PhD	- Vice-Rector, Academic Development and University Administration
Prof. <b>Mihaela Felicia Baciut</b> , MD, PhD	- Vice-Rector, Research and Scientific Activities
Prof. <b>Radu Nicolaie Oprean</b> , MD, PhD	- Vice-Rector, Quality Management and International Relations

## **The direction of the Faculty of Medicine**

Prof. <b>Șoimița Mihaela Suciu</b> , MD, PhD	- Dean of the Medical Faculty
Assoc. Prof. <b>Anca Simona Bojan</b> , MD, PhD	- Vice-Dean, International Relations and Foreign Students' Issues
Prof. <b>Simona Valeria Clichici</b> , MD, PhD	- Vice-Dean, Teaching activities
Assoc. Prof. <b>Olga Hilda Orășan</b> , MD, PhD	- Vice-Dean, Evaluation and Quality Control
Assoc. Prof. <b>Sorin Crișan</b> , MD, PhD	- Vice-Dean, Management, Accademic Development and Students' Issues
Assoc. Prof. <b>Dan Blendea</b> , MD, PhD	- Vice-Dean, Scientific and Evaluation activities

### **Address:**

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#### **Dean's Office**

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## II. EDUCATIONAL OFFER

### A) UNDERGRADUATE STUDIES:

- **Romanian Study Program (courses taught in Romanian)**
- **French Study Program (courses taught in French)**
- **English Study Program (courses taught in English)**
- **Field of study: HEALTH**
- **Study Program: MEDICINE – 360 ECTS**  
*Graduate degree in Medicine (medical-doctor), 6-year university studies.*
- **Study Program: GENERAL NURSING – 240 ECTS**  
*Graduate degree in Nursing (university degree as nurse), 4-year university studies (courses taught in Romanian).*
- **Study Program: RADIOLOGY AND MEDICAL IMAGING – 180 ECTS**  
*Graduate degree in Radiology and Medical Imaging (radiology and imaging assistant), 3-year university studies (courses taught in Romanian).*
- **Study Program: PHYSIO-KINESIOTHERAPY AND REHABILITATION - 180 ECTS**  
*Balneo-physio-kinesiotherapy and recovery diploma (balneo-physio-kinesiotherapy and rehabilitation assistant), 3-year university studies (courses taught in Romanian).*

***The Faculty of Medicine in Cluj-Napoca is among the few medical faculties in the world that offer a study program - Medicine - in three different languages: Romanian, English and French.***

### B) POSTGRADUATE STUDIES

- Master's Degree

There are 13 masters within the Faculty of Medicine, with the duration of 1 or 2 years of study.

- Doctoral Studies

As the master degree program is considered to be included in the 6 years of study of the Faculty of Medicine, the graduates of this specialization can apply directly to the doctorate.

**C) TRAINING SPECIALISTS IN MEDICAL FIELDS, THROUGH RESIDENCY PROGRAMS (3-7 YEARS)**

**D) CONTINUOUS MEDICAL EDUCATION, THROUGH NUMEROUS POSTGRADUATE PROGRAMS, COVERING ALL MEDICAL SPECIALTIES.**

### III. DEPARTMENTS AND DISCIPLINES OF THE FACULTY OF MEDICINE

<b>Departments</b>	<b>Disciplines</b>
1. Morphological Sciences	Anatomic Pathology Anatomy and Embryology Histology
2. Functional Sciences	Pharmacology, toxicology and clinical pharmacology Physiology Pathophysiology Immunology and Allergology
3. Molecular Sciences	Medical Biochemistry Medical Biophysics Cell and Molecular Biology Medical Genetics Microbiology
4. Community Medicine	Epidemiology Hygiene Occupational Medicine Family Medicine Forensic Medicine Public Health and Management
5. Internal Medicine	Medical Clinic I Medical Clinic II Medical Clinic III Medical Clinic IV Medical Clinic V Cardiology – Heart Institute Cardiology - Rehabilitation
6. Medical Specialties	Medical Rehabilitation Dermatology Diabetes and nutrition-related diseases Endocrinology Pneumology Rheumatology Nephrology Geriatrics Infectious Diseases Palliative medicine
7. Surgery	Anesthesia and Intensive Care I Anesthesia and Intensive Care II Cardiovascular Surgery

	Plastic and Reconstructive Surgery
	Surgical Clinic I
	Surgical Clinic II
	Surgical Clinic III
	Surgical Clinic IV
	Surgical Clinic V
	Emergency Medicine
8. Surgical Specialties	Orthopedics, Traumatology and Pediatric Orthopedics
	Urology
	ENT
	Ophthalmology
	Medical Imaging
	Medical Imaging. Nuclear medicine
9. Mother and child	Obstetrics and Gynecology I
	Obstetrics and Gynecology II
	Neonatology
	Pediatrics I
	Pediatrics II
	Pediatrics III
	Surgery and Pediatric Orthopedics
	Nursing
10. Neurosciences	Neurology and Pediatric Neurology
	Psychiatry and Pediatric Psychiatry
	Neurosurgery
11. Oncology	Medical Oncology
	Oncology and Radiotherapy
	Hematology
	Oncologic Surgery and Oncologic Gynecology
12. Medical Education	Sport
	Medical Informatics and Biostatistics
	Medical psychology and psychiatry
	Modern Languages
	Skills - Humanistic Sciences

## THE STRUCTURE OF THE ACADEMIC YEAR 2021-2022

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### LINEAR TEACHING

#### MEDICINE – 1<sup>st</sup> – 3<sup>rd</sup> YEAR

##### 1<sup>st</sup> SEMESTER

27 <sup>th</sup> September 2021 – 17 <sup>th</sup> December 2021	→	classes (12 weeks)
20 <sup>th</sup> December 2021 – 31 <sup>st</sup> December 2021	→	Christmas holiday (1 week)
3 <sup>rd</sup> January 2022 – 14 <sup>th</sup> January 2022	→	classes (2 weeks)
17 <sup>th</sup> January 2022 – 11 <sup>th</sup> February 2022	→	exam session (4 weeks)
14 <sup>th</sup> February 2022 – 18 <sup>th</sup> February 2022	→	winter holiday (1 week)

##### 2<sup>nd</sup> SEMESTER

21 <sup>st</sup> February 2022 – 3 <sup>rd</sup> June 2022	→	classes (14 weeks)
25 <sup>th</sup> April 2022 – 29 <sup>th</sup> April 2022	→	Easter holiday (1 week)
6 <sup>th</sup> June 2022 – 1 <sup>st</sup> July 2022	→	exam session (4 weeks)
11 <sup>th</sup> July 2022 – 14 <sup>th</sup> July 2022	→	re-examination session 1
19 <sup>th</sup> July 2022 – 22 <sup>nd</sup> July 2022	→	re-examination session 2
25 <sup>th</sup> July 2022 – 30 <sup>th</sup> September 2022	→	Summer holiday

\*The number of weeks for summer practice and the period in which they take place is different for each year and specialization.

\*\*The summer practice of the Faculty of Medicine runs from 04.07.2022 to 23.09.2022 and can start on any Monday of the mentioned period.

September 2022 = License Exam for General Nursing, Physio-Kinesiotherapy and Rehabilitation, Radiology and Imaging, Nutrition and Dietetics.

## MODULAR TEACHING

### MEDICINE – 4<sup>th</sup> – 6<sup>th</sup> YEAR

(Modular structure: 36 weeks, representing 30 weeks of courses and 6 weeks of exam sessions)

#### 1<sup>st</sup> Semester

##### 1<sup>st</sup> Module

27<sup>th</sup> September 2021 – 19<sup>th</sup> November 2021 → classes (8 weeks)

22<sup>nd</sup> November 2021 – 26<sup>th</sup> November 2021 → exam session (1 week)

##### 2<sup>nd</sup> Module

29<sup>th</sup> November 2021 – 17<sup>th</sup> December 2021 → classes (3 weeks)

20<sup>th</sup> December 2021 – 31<sup>st</sup> December 2021 → Christmas holiday (1 week)

3<sup>rd</sup> January 2022 – 4<sup>th</sup> February 2022 → classes (5 weeks)

7<sup>th</sup> February 2022 – 11<sup>th</sup> February 2022 → exam session (1 week)

14<sup>th</sup> February 2022 – 18<sup>th</sup> February 2022 → winter holiday (1 week)

#### 2<sup>nd</sup> Semester

##### 3<sup>rd</sup> Module

21<sup>st</sup> February 2022 – 15<sup>th</sup> April 2022 → classes (8 weeks)

18<sup>th</sup> April 2022 – 24<sup>th</sup> April 2022 → exam session (1 week)

##### 4<sup>th</sup> Module

25<sup>th</sup> April 2022 – 29<sup>th</sup> April 2022 → Easter holiday (1 week)

2<sup>nd</sup> May 2022 – 24<sup>th</sup> June 2022 → classes (8 week)

27<sup>th</sup> June 2022 – 1<sup>st</sup> July 2022 → exam session (1 week)

→

**11<sup>th</sup> July 2022 – 14<sup>th</sup> July 2022** → **re-examination session 1**

**19<sup>th</sup> July 2022 – 22<sup>nd</sup> July 2022** → **re-examination session 2**

25<sup>th</sup> July 2022 – 30<sup>th</sup> September 2022 → Summer holiday

##### July 2022

→ License Exam for the English and French study program

##### September 2022

→ License Exam for the Romanian study program

## MASTER'S DEGREE

### 1<sup>st</sup> SEMESTER

- 27<sup>th</sup> September 2021 – 17<sup>th</sup> December 2021 → classes (12 weeks)
- 20<sup>th</sup> December 2021 – 31<sup>st</sup> December 2021 → Christmas holiday (1 week)
- 3<sup>rd</sup> January 2022 – 14<sup>th</sup> January 2022 → classes (2 weeks)
- 17<sup>th</sup> January 2022 – 11<sup>th</sup> February 2022 → exam session (4 weeks)
- 14<sup>th</sup> February 2022 – 18<sup>th</sup> February 2022 → winter holiday (1 week)

### 2<sup>nd</sup> SEMESTER

- 21<sup>st</sup> February 2022 – 3<sup>rd</sup> June 2022 → classes (14 weeks)
- 25<sup>th</sup> April 2022 – 29<sup>th</sup> April 2022 → Easter holiday (1 week)
- 6<sup>th</sup> June 2022 – 1<sup>st</sup> July 2022 → exam session (4 weeks)
- 11<sup>th</sup> July 2022 – 14<sup>th</sup> July 2022 → re-examination session 1
  
- 18<sup>th</sup> July 2022 – 30<sup>th</sup> September 2022 → Summer holiday
- September 2022 → dissertations session I (1 week)

## EXAMINATIONS AND CONTESTS

- September 2021 → enrollment and admission to master's studies
- February 2022 → enrollment for the 2<sup>nd</sup> session of the graduation exam
- 7<sup>th</sup> February – 11<sup>th</sup> February 2022 → Graduation Exam - 2<sup>nd</sup> session

## OTHER EVENTS

- 6<sup>th</sup> – 10<sup>th</sup> December 2021 → „University Days“
- 2<sup>nd</sup> July 2022 → The 2022 Ceremony for the students' graduation

**1. The procedure for the 1<sup>st</sup> year student's registration is the following:**

- For students declared admitted after the entrance exam, registration is based on the matriculation decision issued by the rector; fee-paying students will be enrolled after paying the tuition fee and signing the study contract.
- For foreign students, scholars of the Romanian state, registration is based on the nominal order issued by the Ministry of National Education, on the approval given by the direction of the university and after signing the study contract.
- For fee-paying foreign students, the registration is made on the basis of the registration decision issued by the Foreign Students Department and of the registration order issued by the Ministry of National Education, provided that the tuition fee is paid and the study contract is signed.
- The complete application file, verified by the Foreign Students Department, will be handed over to the Dean's office only after getting the approval of the Ministry of National Education, until the end of December of the current academic year.
- The candidates admitted in the first year and not enrolled within the period established by the direction of the university lose the right to be enrolled.
- According to Ministry's decision, a student may study only one specialty financed by the state budget. The student has to pay a tuition fee to attend a second specialty.

**2. Each student is enrolled in the matriculation register under a unique number, valid for the entire duration of his undergraduate studies.**

**3. The student's application file must contain the following documents when he enrolls at the faculty:**

- the original Baccalaureate diploma. Students who pay tuition fees to attend a second faculty must submit a copy of the Baccalaureate diploma authenticated by the notary public and a document proving that his/her original Baccalaureate diploma is in the university where he/she benefits from a state subsidized place;
- the graduates of a faculty where they benefited from a state subsidized place and who have to pay the tuition fee for attending a second faculty, must submit an authenticated copy of MD or BSc diploma as well;
- the enrollment form;

- an authenticated copy of the birth certificate;
- the medical tests required by the university;
- the written and signed agreement proving the fact that the student knows and agrees to respect the regulations of the university, concerning the academic activity and examinations, and those of the study contract;
- four passport-size photographs.

**4. The application file of the foreign student must contain the following documents when he enrolls at the faculty:**

- the original Baccalaureate diploma and transcript (as the case may be) and its authenticated translation in an international language;
- the language certificate (Romanian, French, English), according to the teaching language of the section the student applies for;
- a photocopy of their passport;
- an authenticated copy of their birth certificate;
- the certificate of recognition and equivalency of the Baccalaureate diploma or the letter of acceptance, issued by the Ministry of national Education;
- the enrollment forms;
- the medical tests required by the university;
- the written and signed agreement proving the fact that the student knows and agrees to respect the regulations of the university, concerning the academic activity and examinations, and those of the study contract;
- four passport-size photographs.

The registration of the international students takes place within the period established by the direction of the university.

**5. When the student enrolls at the faculty,** the Dean's office issues a student card. The student card contains all the marks obtained by the student at examinations or other assessment forms. It also includes the marks of the failed exams. The examiner has the responsibility to fill in the marks and to sign them. In case of transfers, studies interruption or expulsion, the Dean's office withdraws the student card and the transport card, where applicable.

**6. The student's enrollment in an upper year**

Enrollment at the beginning of the academic year is as follows:

1. For years I-III, a student who has subjects not promoted in the years of schooling totaling 10 or less than 10 outstanding credits will be enrolled in the year of study superior to the one from which he comes
2. For years I-III, the student who totals more than 10 outstanding credits in the subjects not promoted, will be enrolled in the complementary year.
3. For years IV-VI, a student is enrolled in the senior year if he / she passes all 60 ECTS credits related to the current year.

4. A student who, after the last year of study, has at least one subjects not promoted of the curriculum of the study program to be followed, will be enrolled in the year of grace.

Students declared admitted in the complementary year (repeaters) have the obligation to enroll until the beginning of the academic year.

Students declared in the complementary year will pay their financial obligations on time and in the amounts established annually by the Board of Directors and validated by the University Senate.

### **International students**

International students are welcome both in the academic community and in the civic community of our city.

In addition to the Romanian study program, the Faculty of Medicine has been offering for over ten years medical education in English and French, with increasing attractiveness for many students from over 56 countries.

At present, about 40% of students of the Faculty of Medicine are foreign students who study in English, French or Romanian.

Foreign students are admitted to studies following a selection procedure based on their application files, according to criteria established by the Faculty of Medicine and approved by the Senate of the University. They don't have an entrance exam.

## ECTS STUDENTS

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The European Credit Transfer and Accumulation System (ECTS) was created to facilitate student mobility from one university to another. The European Union encourages study periods at partner universities, and the Bologna and Berlin Declarations state the need to remove obstacles to academic mobility.

Student mobility within the Socrates-Erasmus programs offers students the opportunity to study for a semester or academic year at another European university. Then, they return to the home university, where they graduate and where they will receive the diploma at graduation. In this way, students benefit from continuity of studies in conditions in which they have access to other educational perspectives and to a new academic, cultural, social and linguistic environment.

The main objective of creating this system was to support students' mobility in order to complete their training by adding the experience of other European universities and obtaining total academic recognition for the period they spent away from the home university.

Total academic recognition translates into replacing a study period at a home university with a period spent at a university abroad, without home studies being prolonged at that time.

### **ECTS credits**

ECTS credits are allocated to courses and practical activities in order to assess the students' effort to gain the notions of the activity. They reflect the amount of work each course requires in relation to the overall amount of work necessary to complete a full academic year of study at the university, which includes: courses, seminars, practical work and individual work in the laboratory, in the library or at home, exams and other types of evaluation.

In the ECTS system, 60 credits represent one year of study (in terms of workload). Normally, 30 credits are allocated per semester.

ECTS credits are also allocated to practical internships and to the preparation of the license thesis when these activities are part of the regular curriculum at both home and host institutions.

Each course allocates a number of credits, which will only be obtained by students who fully promote the activities following exams or other types of assessment.

For the recognition of the Socrates-Erasmus mobility, the student must accumulate at least 25 ECTS credits for a period of 4-5 months and at least 50 ECTS credits for a period of 9 months spent in the host institution abroad. The credits obtained abroad must be related to subjects that the student should study at UMF "Iuliu Hațieganu" Cluj-Napoca during the academic year in which he/she is enrolled and benefits from the mobility. It is possible to recognize at

most two exams related to a higher academic year (not more than 15 credits in advance).

### **The ECTS grading scale**

Examination and assessment results are generally expressed in marks. There are various grading systems in Europe, which is why an ECTS grading scale has been created to equate the marks students receive at the host university. This procedure also provides other information about the student's work, but does not replace the mark the student will get at the home university.

### **How does it work?**

The main ECTS tools to facilitate academic recognition are:

- Information Package
- Learning Agreement
- Transcript of Records

**The Information Package** is provided by all institutions wishing to use the ECTS system; it details the courses available at that university. It also provides general information about the institution, its location, student accommodation, administrative registration procedures and academic calendar. This package is yearly updated.

**The Learning Agreement** describes the study program abroad and is completed by the student in collaboration with the two academic institutions involved, before he / she reaches the host university.

**The Transcript of Records** details the student's academic achievements before and after the period of study abroad. It contains, in addition to the ECTS credits granted, the mark received by the student according to the local grading system as well as the ECTS grading scale. The combination of ECTS credits and the grades obtained according to the local grading system describe quantitatively and qualitatively the work done by the student at the host university.

These tools are then used by departmental and institutional coordinators on ECTS administrative and academic issues, designated by each institution. The grade obtained by the student for a certain subject, written in the transcript of records, is given by the ECTS academic coordinator of the Faculty, taking into account the grade obtained by the student in the host institution, according to the ECTS grading scale.

By using ECTS, students' curricula and academic performance are transparent, leading to greater academic recognition.

### **How can students obtain ECTS mobility?**

They should contact the departmental coordinator of their home institution and go through the information package of other institutions to choose the best destination and prepare their study program abroad.

### **How is academic recognition ensured?**

The ECTS study program must be approved by both home and host institutions before the student moves to that country. If the study program described in the Learning Agreement is satisfactorily fulfilled by the student, it is fully recognized by the home university. This means that the volume of study accumulated at the host university, translated into ECTS credits, will be the equivalent of the same volume of study that the student would have had to accumulate at the home university.

### **How are ECTS credits transferred?**

Academic institutions prepare and transfer each other transcripts for all the students who benefit from ECTS mobilities. A copy of the transcript is given to the student and is checked by both home and host universities before and after the mobility.

### **Is it possible to continue studying abroad in the ECTS system?**

A student who has benefited from ECTS mobility can choose to stay at the host university to complete his studies there or to collaborate with a third institution for his / her training. This is possible only if both institutions express their agreement and that the student accepts the conditions required for obtaining a diploma or for transferring.

The transcript of records provides a history of the student's academic achievements; that is why it is the document which helps partner institutions make decisions on the continuation of ECTS mobility studies and on the European openness to academic mobility, in general.

### **Students' evaluation criteria and ECTS grading scale**

Courses and study modules are evaluated through written and oral exams, practical work, demonstrations and other applicable methods. Students receive information about the evaluation criteria at the beginning of the study module.

<b>ECTS</b>	<b>Grade in Romania</b>	<b>Definition</b>
A	10	Excellent = outstanding achievement with some minor mistakes
B	9	Very Good = achievement above the average with some mistakes
C	7-8	Good = generally good achievement with a few mistakes
D	6	Satisfactory = medium with significant shortcomings
E	5	Sufficient = performance meets the minimum criteria
FX	4	Fail = requires more work to receive the credits

F	1-3	Fail = much extra work is needed
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ECTS grading scales for different countries

Romania	1 - 4	5	6	7	8	9	10
ECTS scale	FX, F Fail	E Sufficient	D Satisfactory	C Good	C Good	B Very Good	A Excellent
Austria	5	-	4	-	3	2	1
Albania	1 - 4	5	6	7	8	9	10
Bulgaria	2 Слаб	5 Среден	-	-	4 Добър	5 Много добър	6 Отличен
Belgium	7, 8, 9	10	11	12	13, 14	15, 16, 17	18, 19, 20
China	0 - 59.99	60 - 69.99	70 - 74.99	75 - 79.99	80 - 84.99	85 - 89.99	90 - 100
Denmark	0, 3, 5	6	7	8	9	10	11, 13
Switzerland	< 3,5	3,5 - 3,99	4,0 - 4,49	4,5 - 4,99	5,0 - 5,49	5,5	5,51 - 6,0
Finland		1	1½	-	2	2½	3
France	Insuffisant (< 10)	Passable (10 - 10,49)	Passable (10,5- 10,99)	Assez bien (11,0 - 11,49)	Assez bien (11,5 - 12,49)	Bien (12,5 - 14,49)	Très bien (14,5- 20,0)
Germany	> 4,01	4,00 - 3,51	3,5 - 3,01	3,00 - 2,51	2,50 - 2,01	2,00 - 1,51	1,50 - 1,00
Greece	2, 3, 4	5	6	-	7	8,9	10
Jordan	0 - 49.99	50 - 50.99	51 - 59.99	60 - 69.99	70 - 79.99	80 - 89.99	90 - 100
Ireland	< 25% Fail	25% - 39% Pass	40% - 44% 3 <sup>rd</sup> pass	45% - 54% -	55% - 69% 2 <sup>nd</sup> /II	70% - 84% 2 <sup>nd</sup> /I	85% - 100% I

Iceland	Fail	5	-	6	7	8	9, 10
Italy	≤ 17	18, 19	20 - 22	23 - 24	25 - 26	27, 28	29, 30, 30+
Great Britain	0 - 39% (Fail)	40 - 49% (3 <sup>rd</sup> )	50 - 54% (2ii)	55 - 59% (2ii)	60 - 64% (2i)	65 - 69% (Upper 2i)	70 - 100% (First)
Norway	6 - 4.1	4 - 3.5	3.5 - 3	2.9 - 2.4	2.3 - 2	1.9 - 1.2	1.1 - 1.0
The Netherlands	1 - 4	5	6	-	7	8	9, 10
Poland	< 3,00	3,00	3,01 - 3,49	-	3,50 - 3,99	4,00 - 4,49	4,50 - 5,00
Portugal	1 - 9	10	11, 12	13	14, 15	16, 17	18, 19, 20
Slovakia	5	-	4	-	3	2	1
Slovenia	1 - 5.9	6	6.1 - 6.9	7 - 7.5	7.6 - 7.9	8 - 9.9	10
Spain	< 5 Suspenso	5,0 - 5,49 Aprobado	5,5 - 6,49 Aprobado	6,5 - 7,49 Notable	7,5 - 8,49 Notable	8,5 - 9,49 Sobresaliente Excellent	9,5 - 10 Matricula de Honor
United States of America	E - F/0 - 59	D/60 - 65	- /66 - 72	C/73 - 79	B/80 - 86	A - /87 - 93	A/94 - 100
Hungary	1,00 - 1,99 elegtelen	-	2,00 - 2,50 elegseges	-	2,51 - 3,50 közepes	3,51 - 4,50 jó	4,51 - 5,00 jelcs, kivaló
Turkey	1 - 4 Noksan/Pek Noksan	4,5 - 4,99	5,00 - 6,49 Orta	6,5 - 6,99 Orta	7,00 - 7,99 Lyi	8,00 - 8,99 Lyi	9,0 - 10,0 Pek iyi

For further information on the ECTS system of credits and how it is applied in “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca, please access the regulations concerning the application of the European Credit Transfer and Accumulation System (ECTS) on the university website: <http://www.umfcluj.ro>.

### **ECTS Coordinators**

University ECTS Coordinator:

Prof. **Carmen Mihaela Mihu**, MD, PhD - Vice-Rector, Teaching and Educational Evaluation

Faculty of Medicine:

Prof. **Simona Valeria Clichici**, MD, PhD - Vice-Dean, Teaching and Educational Activities

Director of International Relations:

Prof. **Dan Dumitrașcu**, MD, PhD

### **Language of instruction**

**The language of instruction at the “Iuliu Hațieganu” University of Medicine and Pharmacy is Romanian.**

The Faculty of Medicine offers study programs in English and French where the courses are held in English and French, but beginning with the fourth year, the clinical internships are in Romanian.

### **Linguistic Opportunities**

All our University students have the opportunity to study a European language. Through these courses, students can acquire practical skills - reading, writing, listening and speaking. All the facilities of the Department of Modern Languages are available to all the students and the teaching staff of the University.

### **Scholarships**

Over 40% of our students benefit from study or social scholarships, offered by the University.

These types of scholarships are granted to students with outstanding achievements and, under certain circumstances, to students with a special social situation.

During the mobility period, students keep their right to scholarship, granted in the national scholarship system.

Students who have benefited from mobility, but who could not accumulate the maximum number of credits to validate the year, are eligible for the scholarship criteria and for accommodation in the university campus, according to Senate Council's decision from 16.10.2007, and they are exonerated from paying remaining invalidated credits.

### **Food and Accommodation**

Our University has its own campus; the 9 dormitories have a capacity of 2700 places, being completely renovated. Most Romanian students from outside

Cluj live in the University dormitories, but the international students prefer rented apartments.

The University Restaurant, located near the campus, on Victor Babeş Street, no. 13, offers diversified menus and has a capacity of 150 seats, being recently renovated.

There are also many restaurants and fast food restaurants at reasonable prices in the city centre and near the medical institutions where courses take place.

For foreign students who do not live in dormitories, the supermarkets and restaurants in neighborhoods offer convenient food supply as prices are much lower than in most European countries. The cost of food per month can reach 200-300 EUR.

### **Health**

The student's medical cabinet is located within the Dormitory no. VII of the campus Haşdeu, providing medical assistance to the UMF students. The medical certificates necessary for motivating absences on medical grounds are countersigned here.

### **Sports**

The Student Sports Club, founded in 1966, has a sports ground where students can practice basketball, volleyball, football, aerobics, tennis, etc. The University's Sports Hall has been recently renovated.

### STUDIES STRUCTURE

The structure of all study programs offered by UMF is based on the academic year system, divided into two semesters.

The educational process takes place in the following way:

- linear, with 2 exam sessions, one at the end of each semester (winter and summer)
- modular, organized in blocks of disciplines, with four exam sessions, two for each semester.

The studies include theoretical courses, clinical internships, seminars and practical work, elective courses, optional courses and a bachelor's examination.

The medical undergraduate studies aim at familiarizing the students with the main applications of the medical field and with their theoretical basis. After graduation, students must be able to work independently as medical experts, as practitioners or as researchers.

**Language studies** are absolutely necessary for Romanian students because acquiring a good level of competence in a foreign language is essential for students' professional development, due to the increased mobility of EU and non EU citizens.

International students are required to learn the Romanian language because starting with the fourth year practical training in clinics is conducted in Romanian.

### **Elective courses**

Each academic year is assigned a number of elective courses. Students may choose one of these courses which will then become mandatory for the study. According to the university curriculum, each elective course is allocated 14 hours / semester and 2 credits.

### **Optional courses**

In each academic year, a number of optional courses are added to the compulsory courses. These are intended to deepen the knowledge gained during compulsory courses. The choice of these courses, their attendance and related examinations are not mandatory. Optional courses have additional credits.

### **The final exam**

The final exam at UMF "Iuliu Hațieganu" is the bachelor's examination. It has two parts:

**1. Specialty test** - with 2 components:

- **Written test** - consists of multiple choice questions from the bibliography approved by the Council of the Faculty at least 6 months before the exam.

- **Practical test** - is in the form of examination and presentation of a clinical case appreciated by a specialized multidisciplinary commission.

**2. Presentation of the license thesis:** the license thesis is the result of the personal research conducted by students for at least 2 years of study (1 year for the study programs of 180 and 240 ECTS), in a specialty chosen by each student, according to the personal development program.

The minimum average required to validate the final license exam is 6 (six).

License exam sessions: July (for the graduates of the English and French study programs), September (for the graduates of the Romanian study programs) and February.

## **ORGANIZING ACADEMIC ACTIVITIES. EXAMINATIONS. COMPLETING THE REQUIREMENTS OF A STUDY YEAR**

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1. Assessment of students' knowledge is done through exams, with marks from 1 to 10. The minimum mark to pass an exam is 5 and the highest mark is 10. The final forms of examination are represented by the theoretical exam and the practical exam. In case students' knowledge cannot be tested through practical examinations due to the specific features of a particular subject, an oral final evaluation will be organized instead. Successful completion of the final examination is conditioned by obtaining the promotion mark (minimum 5) for both forms of examination (written and practical). If the students are present at only one form of examinations, their final mark will be 4. These students will only take the examination which they failed during the re-examination session.
2. Students are allowed to go to the exam only on the basis of the official students' record issued by the Dean's Office. This official record certifies the students' status and fulfillment of their financial obligations.
3. At the beginning of each academic year, the departments will display the way in which the evaluation is done and the percentage each exam component holds within the student's final mark. It is mandatory that the marks obtained at both theoretical and practical examinations have a weight in the final mark of the student.
4. Validating a year of study requires a minimum of 50 credits out of 60 credits allocated to one year of study. In order to be promoted to a higher year, the amount of outstanding credits from the lower years must not exceed 10 credit units. The calculation of credit units obtained in that academic year does not include credit units obtained in that year from outstanding credits. Students are required to accumulate all 180 credits for the first three years of undergraduate study at the end of the third year of study. If one of the requirements is not met, the student is enrolled in a complementary year, being considered a repeat. For the promotion of the outstanding credits, a fee is paid according to the annex "School fees".
5. All remaining credits must be obtained within maximum two years; otherwise students will be enrolled in a complementary year.
6. For the Medicine study program, at the end of the third year of study, students have the obligation to accumulate all the 180 credits of the first three years.
7. Students may go three times at the same exam during the same academic year. The curriculum includes four exam sessions (for linear education: winter session, summer session and two summer re-

examination sessions). For the third presentation to an exam, the student must pay a fee, according to the Fees Appendix. For the linear education, exams are organized only during the exam sessions and for the modular education, they are organized at the end of modules. Students must respect the examination dates as scheduled by departments, in agreement with the students' representatives. The absence to one scheduled exam is considered to be a failure of the exam and the loss of one chance of passing it.

8. Within the modular education, exams are mandatory at the end of each module, during the corresponding sessions. During an academic year, students have the right to be present only three times at the same exam, but only one presentation is admitted between October-July (with their own series), and the 2nd and 3rd presentation can only take place in the re-examination sessions.

In the groups of disciplines where the verification of the knowledge is in the form of a complex exam completed by a single grade, at the written exam each discipline will allocate a number of questions proportional to the weight of its hours of activity; the practical exam will be unique and will be organized at the end of the activity, and the final grade will be calculated by the proportionality ratio between the different disciplines, according to an algorithm accepted and announced in advance.

9. The dates for the written exams will be scheduled in agreement with the students' representatives, each discipline being required to submit at least two dates of exam for a series. If the theoretical exam takes place on the same day for the entire series of students, the practical exam will not exceed the three consecutive days.
10. Re-examination for a higher mark is allowed only based on the approval of the direction of the Faculty, as follows: maximum 6 re-examinations during the university years and no more than 2 re-examinations per year. The mark obtained after re-examination is final. A three-member commission will re-examine the student applying for re-examination.

*The new mark obtained is taken into account in calculating the average that ensures social rights to the student. The fee for these exams is set out in the Fees Appendix. In order to be able to request a re-examination to increase the mark, a student must have passed all his/her exams.*

11. The student who tries to validate the exam through fraud will be sanctioned. The sanctions that may be proposed by the direction of the Faculty can be found in Chap. VIII of the Regulations concerning student academic activity.

*\* All students enrolled in the study programs in foreign languages, except for those who have Romanian citizenship, must take a Romanian language test at the end of the third year of study. The test is organized at the Modern Languages Discipline of the Faculty of Medicine.*

*Foreign students may be enrolled in fourth year only if they pass this test. Those who do not pass this test are enrolled in a complementary year.*

Starting with the academic year 2017-2018, the exam is unique for each discipline of the curriculum, taking place on the same day, having the same topics, based on a unique bibliography, for all the series of a study program. Grading is based on unique criteria, the same for all students.

## REGULATION FOR THE EQUIVALENCE OF STUDIES

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carried out in other medical education institutions by students applying for enrollment in an academic year other than the first or the sixth year of study.

The provisions of this Regulation apply to foreign students who require enrollment, as well as to Romanian students who require transfer or equivalence and who have completed part of their studies in a similar institution in Romania.

Equivalence is not granted for courses taught in the academic year that the student is enrolling in.

Equivalence is not granted for courses of studies older than 6 years since their completion.

### **Requirements necessary for the studies to be eligible for equivalence:**

- The content of the studied subjects (certified by the syllabus) and their duration (certified by the curriculum) should be at least 70% similar to the equivalent curriculum of the "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca.
- The sum of the transferable credits corresponding to the subjects not studied but required by the syllabus of the "Iuliu Hațieganu" University of Medicine and Pharmacy faculties (difference exams) **cannot exceed 10 credits** (without Physical Education and Romanian as a Foreign Language).
- For students who have graduated from universities accredited in the EU, equivalence may be also granted to courses taught in the academic year that the student enrolls in, provided that the difference between the missing credits and the recognized extra credits does not exceed 15.
- Students must present an official certificate showing the marking system applied in the institution where they studied and its equivalence with the ECTS system.
- Only the subjects where the applicant has passed the examinations in the educational institution where he has completed his studies will be considered.
- Clinical internships performed, but not followed by passing the corresponding exam, will not be recognized.

### **For equivalence of studies, the applicant shall submit the following documents in original:**

- the transcript of records
- the curriculum
- the syllabus of each subject for which equivalence is requested
- an official statement explaining the marking system used by the institution where the applicant studied as well as its correspondence to the ECTS system
- an empty folder
- a written application mentioning the subjects for which the applicant is requesting equivalence

- a request for the equivalence of studies by the Vice Rectorship for Teaching Activities.

All documents required for equivalence will be submitted **at the same time**. Subsequent additional documents will not be accepted in the application file.

Only studies completed within medical higher education institutions, leading to the awarding of a physician's diploma, will be eligible for equivalence. Equivalence of studies in biology, veterinary medicine, nursing, medical colleges or master's degrees, etc., is not acceptable.

**These Regulations are appended to the Learning Agreement.**

The requests for the equivalence of studies will be submitted to the Dean's Office in the first 10 working days of September for the next academic year or, with the approval of the Administration Council, by the deadline for enrollment of foreign students at our university, a date set by the Administration Council according to the instructions of the Ministry of National Education.

The direction of the Faculty appoints a member responsible for evaluating the applications for the equivalence of studies and then approves it by means of minutes, with the signature of all members. The evaluation of the applications is made within 7 working days from the date of their receipt by the Dean's office.

The direction of the Faculty has the right to request and take into account the opinion of the course holders of those subjects for which the duration of the studies and / or the content of the syllabus do not coincide with those of the faculties to which registration is requested.

Possible appeals to the decision of the Faculty shall be submitted within 48 hours after the communication of the decision to the applicant.

Appeals are discussed by the designated assessor of the Faculty and the applicant.

The decision taken by the direction of the Faculty following the discussion of the appeal is final and unassailable.

## **STUDENTS DISTRIBUTION TO STATE SUBSIDIZED – FEE-PAYING PLACES**

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**Starting with the 2009-2010 academic year, students are allocated state subsidized places yearly according to their academic achievements.**

**The allocation is based on regulations available on the university website.**

**Main criterion: academic achievements.**

**Extracts from the Regulation regarding students distribution to state subsidized – fee-paying places:**

This methodology applies to all students who were enrolled following a written entrance exam, beginning with the academic year 2005-2006. Students enrolled on special state subsidized places, fee-paying students, students who pay a fee for the equivalence of studies and students who were enrolled by order or letter of acceptance from the Ministry of National Education are not subject to this decision and do not benefit from its provisions.

1. The performance standard used to allocate the state subsidized places in one academic year is the students' school performances at the end of the second re-examination session of the previous academic year.
2. The average taken into account for the allocation of the state-subsidized places is the arithmetic average between the weighted average of student's marks and their arithmetic average, calculated for the academic year that ends.
3. In both types of averages (weighted and arithmetic), the unsuccessful exams, regardless of the marks obtained, will be quoted with 0 (zero).
4. Summer practice is not taken into account for the allocation of state subsidized places. In calculating the weighted average, the total number of credits used for the calculation is reduced accordingly.
5. The places distribution is in the descending order of the averages.
6. If several students have the same average, the following criteria are applied, in this indicated order:
  - a. The weighted average
  - b. If there are still students with the same average, the grade of the discipline having the most credits will be taken into account.
  - c. If there are still students with the same average, the following discipline having the most credits will be taken into account (if this discipline is divided into two semesters, the arithmetic average is calculated). This criterion will be applied until there aren't any equal averages. If there are several disciplines with the same number of credits, all these disciplines will be considered in alphabetical order.
7. Students' results are considered as unitary, according to the year of study and the faculty, without any differences among student series.

8. Students who do not have remaining credits for the re-examination sessions, may participate to re-examinations in order to increase their grades in the first re-examination session.
9. A student may go to re-examinations in order to increase his/her mark only twice in the same academic year.
10. Students' ranking for the allocation of state-subsidized places is carried out by the staff of the Dean's office, checked by the designated representatives of students and approved, under signature, by the dean of the Faculty.
11. The ranking is announced and displayed at the Dean's office within 15 working days after the end of first re-examination session.
12. Students may contest the ranking within 2 calendar days after its announcement.

For further details, please visit the regulations available on the university website: [www.umfcluj.ro](http://www.umfcluj.ro)

## CURRICULUM

### 1<sup>st</sup> YEAR (2021-2022)

Course code	Discipline	Course hours	Practical course hours	Credits	Semester	Evaluation
MED11201EN	General Anatomy and Embryology. Topographic and Sectional Anatomy	56	126	12 (6+6)	I/II	E1, E2
MED1102EN	Medical Biophysics	28	28	5	I	E1
MED1103EN	Cell and Molecular Biology	28	28	5	I	E1
MED1104EN	Medical Biostatistics and Informatics	14	28	4	I	E1
MED1105EN	Behavioral Sciences. Medical Sociology	14	14	2	I	E1
MED1106EN	Fundamentals of chemistry	10	4	2	I	C
MED1107EN	Medical Bioethics and History of Medicine	14	7	2	I	V
MED1108EN	Bases of Medical Communication	14	14	2	I	V
MED1109EN	Elective Course	14	-	2	I	V
MED1210EN	Descriptive Biochemistry	28	28	5	II	E2
MED1211EN	Physiology	28	28	5	II	E2
MED1212EN	First Aid	14	14	2	II	V
MED1213EN	Academic integrity and ethics. Medical professionalism	14	7	2	II	V
MED1214EN	Medical Psychology	14	14	2	II	E2
MED1215EN	Problem Based Learning	-	28	3	II	C
MED1216EN	Modern/Romanian Language	-	56	2	II	C
MED1217EN	Sport*	-	28	*1	II	C
MED1218EN	Specialty Medical Practice	-	120	3	-	V

- Romanian Language is compulsory for international students and it will consist of 84 h = 3 hours/week;
- Modern Language is compulsory for Romanian students and elective for international students;
- Medical Biophysics, Cell and Molecular Biology and Medical Informatics and Biostatistics are fully studied during the first semester;

- First Aid is conducted in the mirror with the Bases of Medical Communication - 2 series (series 1 and 2) in the first semester and 2 series (series 3 and 4) in the second semester;
- Medical Psychology is conducted in the mirror with the Behavioral Sciences - 2 series (series 1 and 2) in the first semester and 2 series (series 3 and 4) in the second semester;
- \*Sport is a COMPULSORY discipline with additional credits.

## 2<sup>nd</sup> YEAR (2021-2022)

Course code	Discipline	Course hours	Practical course hours	Credits	Semester	Evaluation
MED2101EN	Topographic and Sectional Applied Anatomy	28	42	6	I	E1
MED2102EN	Metabolic Biochemistry	42	42	7	I	E1
MED21203EN	Histology	56	56	8 (4+4)	I/II	E1, E2
MED21204EN	Physiology	84	70	12 (6+6)	I/II	E1, E2
MED21205EN	General Microbiology. Clinical Microbiology	70	56	8 (4+4)	I/II	E1, E2
MED21206EN	Medical Genetics	42	56	7 (3+4)	I/II	E2
MED2207EN	Medical Research Methodology	21	21	3	II	E2
MED2208EN	Fundamental Epidemiology and Primary Healthcare	14	7	2	II	V
MED21209EN	Modern/Romanian Language	-	56	2	II	C
MED21210EN	Sport*	-	28	1*	II	V
MED2211EN	Elective Course	14	-	2	II	V
MED2212EN	Specialty Medical Practice	-	160	3	-	V

- Romanian Language is compulsory for international students and will consist of 84 h = 3 hours/week;
- Modern Language is compulsory for Romanian students and elective for international students.
- \*Sport is a COMPULSORY discipline with additional credits.

### 3<sup>rd</sup> YEAR (2021-2022)

Course code	Discipline	Course hours	Practical course hours	Credits	Semester	Evaluation
MED31201EN	Medical Semiology*	84	154	12 (5+7)	I/II	E1, E2
MED3102EN	Surgical Semiology	42	56	7	I	E1
MED31203EN	Pathophysiology	56	56	8 (4+4)	I/II	E1, E2
MED31204EN	Pathologic Anatomy	70	70	9 (4+5)	I/II	E1, E2
MED31205EN	Pharmacology	42	28	8 (4+4)	I/II	E1, E2
MED31206EN	Hygiene	42	42	7 (2+5)	I/II	V, E2
MED3107EN	Basic Practical Skills. Interprofesional education	7	21	2	I	V
MED3108EN	Elective Course	14	-	2	I	V
MED3209EN	Immunology	14	14	2	II	V
MED3210EN	Romanian Language* (for foreign students)	-	*84	-	II	C
MED3211EN	Speciality Medical Practice	-	120	3	-	C

-\* 7 hours course are compulsory for:

- Cardiology - Heart Institute - Romanian and French series;
- Cardiology Rehabilitation – English series;

- Romanian series 1 and 2 will do Surgical Semiology in the first semester and Immunology in the second semester.

- Romanian series 3 and 4 will do Surgical Semiology in the second semester and Immunology in the first semester.

-\*Romanian language is compulsory for international students.

- At the end of the 3rd year, students from English and French study programs are going to have an eliminatory Romanian language test.

#### 4<sup>th</sup> YEAR (2021-2022)

Course code	Discipline	Course hours	Practical course hours	Credits	Semester	Evaluation
MED4101EN	*Internal medicine I	28	63	5	I	E1
	Gastroenterology	21	42	4		
MED4102EN	Clinical Pharmacology	21	14	3	I	E1
MED4103EN	Nephrology	21	21	3	I	E1
MED4104EN	Hematology	21	21	3	I	E1
MED4105EN	Clinical Biochemistry	14	7	2	I	E1
MED4106EN	Ophthalmology	14	28	3	I	E1
MED4107EN	Urology	14	28	3	I	E1
MED4108EN	Endocrinology	14	21	2	I	E1
	Diabetes, Nutritional and Metabolic Diseases	14	14	2		
MED4209EN	*Radiology. Locomotor system, excretory system and emergency	21	21	5	II	E2
	Medical Imaging	14	14			
MED4210EN	Occupational Medicine and Occupational diseases	14	28	3	II	E2
MED4211EN	*General Surgery	56	140	12	II	E2
	Oncologic Surgery	7	7			
	Cardiovascular Surgery	7	7			
	Thoracic Surgery	7	7			
	Plastic Surgery	7	7			
MED4212EN	Cranio-Maxillo-Facial Surgery	14	14	2	II	E2
MED4213EN	Orthopedics – Traumatology	14	28	3	II	E2
	Pediatric Orthopedics	7	7			
MED4214EN	Elective Course	14	-	2	II	V
MED4215EN	Speciality Medical Practice	-	160	3	-	C

- Modules are organized in 7-week blocks + 2 weeks of exam session;
- \*Modules are organized in 8-week blocks + 1 week of exam session;
- Internal Medicine is studied in both semesters, 4 series in the first semester and 4 series in the second semester;

- Surgery is studied in both semesters, 4 series in the first semester and 4 series in the second semester;
- Internal Medicine has a clinical internship of 3 hours /day 4 days/week, in the guard service 1,25 h/week - > 10 hours/module in the emergency room (2 participations of 5 hours each);
- Surgery clinical internships take place 3 hours /day, 5 days/week, in the emergency service 2,5 h/week - >20 hours in the emergency room /module;
- The following exams: Radiology. Locomotor System, Excretory System and Emergency and Medical Imaging, General Surgery, Oncologic Surgery, Cardiovascular Surgery and Plastic Surgery, Endocrinology and Diabetes, Nutritional and Metabolic Diseases, Orthopedics -Traumatology and Pediatric Orthopedics are complex and carried out according to the methodology issued by the Dean's Office.

## 5<sup>th</sup> YEAR (2021-2022)

Course code	Discipline	Course hours	Practical course hours	Credits	Semester	Evaluation
MED5101EN	Internal Medicine II*	28	56	6	I	E1
	Cardiology	28	63	6		
	Pneumology	14	14	2		
MED5102EN	Clinical Pharmacology	21	21	4	I	E1
MED5103EN	Neurosciences	-	-	10	I	E1
	Neurology	56	70			
	Neurosurgery	14	14			
MED5204EN	Elective Course	14	-	2	I	V
MED5205EN	Radiology. Respiratory System, Cardiovascular System and Neurology	14	14	2	II	E2
MED5206EN	Pediatrics**	70	160	12	II	E2
	Puericulture	14	14			
	Pediatric Surgery	7	21			
MED5207EN	ENT – Otolaryngology	28	28	5	II	E2
MED5208EN	Medical Oncology	14	14	2	II	E2
	Radiotherapy	7	14	2		
MED5209EN	Rheumatology	14	14	2	II	E2
	Medical Rehabilitation	14	14	2		
MED5210EN	Preparation of the License Thesis ***	-	80	2*	II	V
MED5211EN	Specialty Medical Practice	-	120	3	-	C

- Modules are organized in 7-week blocks + 2 weeks of exam session;
- \*Modules are organized in 8-week blocks + 1 week of exam session;
- \*\*For Pediatrics Clinical internships, there are 4 hours /day; 8 hours of clinical internship are required in the emergency service;
- \*\*\*Credits for the Preparation of the License Thesis are supplementary credits;
- The following exams: Internal Medicine. Cardiology, Interventional Cardiology, Pneumology, Neurology, Neurosurgery, Pediatrics, Puericulture,

Pediatric Surgery, Oncology. Palliative care, Radiotherapy, Rhumatology and Medical Rehabilitation are complex and carried out according to the methodology issued by the Dean's Office.

- 7 hours of Interventional cardiology training, are done at the Heart Institut, Recuperation Cardiology and Medical I;

## 6<sup>th</sup> YEAR (2021-2022)

Course code	Discipline	Course hours	Practical course hours	Credits	Semester	Evaluation
MED6101EN	Family Medicine	28	42	5	I	E1
MED6102EN	Special epidemiology and healthcare associated infections	14	14	2	I	E1
MED6103EN	Dermatology	28	28	4	I	E1
	Alergology	7	14	2		
MED6104EN	Obstetrics-Gynecology*	56	140	10	I	E1
	Neonatology	7	14			
MED6105EN	Forensic Medicine	21	21	3	I	E1
MED6106EN	Emergency Medicine	14	14	2	I	E1
MED6207EN	Palliativ Care	14	14	2	I	E1
MED6208EN	Geriatrics	14	14	2	II	E2
MED6209EN	Psychiatry	42	42	7	II	E2
	Pediatic Psychiatry	14	14			
MED6210EN	Infectious Diseases	49	70	9	II	E2
MED6211EN	Anesthesia and Intensive Care	21	21	3	II	E2
MED6212EN	Training in the Practical Skills Center. Interprofessional education	7	21	2	II	V
MED6213EN	Public Health and Management	28	14	3	II	E2
MED6214EN	Malpractice and medical law. Medical deontology	14	-	2	II	V
MED6215EN	Elective Course	14	-	2	II	V
MED6216EN	Preparation of the License Thesis **	-	80*	2*	II	C

### Additional credits

Passing the graduate examination			10	C
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- Modules are organized in 7-week blocks of + 2 weeks exam session;
- \* Gynecology internships are of 4 hours/day; 4 hours of internship/week are compulsory within the emergency service;

- \*\*Credits for the Preparation of the License Thesis are supplementary credits.

## SYLLABUS – SUBJECTS DESCRIPTION

### A. COMPULSORY COURSES

#### 1<sup>st</sup> YEAR

#### GENERAL ANATOMY AND EMBRIOLOGY. TOPOGRAPHIC AND SECTIONAL ANATOMY

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>General Anatomy and Embryology</b>
<b>Course coordinator</b>	<b>Assoc. Prof. Bartoș Dana Monica, MD. PhD Lecturer Dr. Carmen Micu, MD. PhD</b>
<b>Department</b>	<b>Morphological Sciences</b>
<b>Discipline</b>	<b>Anatomy and Embryology</b>
<b>Course code</b>	<b>MED11201EN</b>

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities		Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/semester							
		L	PA	CI		PA	CI					
I	Compulsory	2	4	-	28	56	-	52	136	6	Written + oral exam	
II		2	5		28	70		52	150	6		

L = lectures; PA = practical activities; CI = clinical internship

#### Pre-requisites: -

#### General objectives:

- Describe basic principles of embryology and general anatomical concepts.
- Develop a broad understanding of the structural organization of the human body at the macroscopic level.
- Develop a foundation for physical examination and functional assessment of the human organism.
- Describe the thoracic, abdomen and pelvis cavities and the viscera they contain.
- Describe the gross anatomy of skull, head and neck.
- Describe the three-dimensional interrelationships & the general principles of organs & blood & nerve supply.
- Provide anatomical basis for cross sectional and 3D digital imaging.

- Knowledge of topographic and sectional anatomical data with medical, surgical and imagistic relevance.

**Specific objectives:**

**1. Musculo-Skeletal System and Joints**

- Locate and identify the major components of the skeletal system and describe their functions.
- Put in anatomical position a bone.
- Describe the different types of bones and provide an example of each type.
- Identify the parts of a bone.
- Locate and name the muscle insertions on a bone.
- Identify and describe the different types of joints, explain their functions, and provide an example.
- Identify the types of muscle and describe how the muscular system's functions.
- Locate and identify a muscle in the body.
- Describe a muscle.
- Locate and identify the blood vessels and innervation that supply and innervate a muscle.
- Know the specific groups of muscles by layers.
- Describe and identify specific topographic areas.
- Identify and describe the major vessels, nervous plexuses and nerves at the level of the limbs, trunk and neck.

**2. Thorax**

- Identify the major components of the thoracic cavity and describe their functions.
- Locate and identify the lung.
- Describe the features of the lung.
- Describe the features of the bronchial tree.
- Describe the vascularization and innervation of the lung.
- Describe the pleura.
- Describe the division of the mediastinum.
- Describe and identify the mediastinum components.
- Describe and identify specific topographic areas.
- Locate and identify the heart.
- Describe the features of the heart.
- Describe the vascularization and innervation of the heart.
- Describe the excitoconduutory system.
- Describe the pericardium.
- Locate and identify the esophagus.
- Describe the features of the esophagus.
- Describe the vascularization and innervation of the esophagus.

- Identify and describe the major vessels, nervous plexuses and nerves in the thorax.

### **3. Digestive and urino-genital systems**

- Identify the major components of the digestive and urino-genital systems and describe their functions.
- Describe the overall structure, sections and layers of the abdominal and pelvic cavity.
- Describe and identify the peritoneum.
- Locate and identify major structures of the digestive and urino-genital systems.
- Describe the structures of the digestive and urino-genital systems.
- Vascularization and innervation of the digestive and urino-genital systems.
- Identify and describe the major vessels, nervous plexuses and nerves in the abdomino-pelvic cavity.
- Describe and identify specific topographic areas.

### **4. Endocrine system**

- Identify and describe the major components of the endocrine system and describe them.
- Describe the vascularization and innervation of the structures of the endocrine system.

## **Course content:**

### ***I Semester***

1. The object of anatomy: the human being, introduction to the study of anatomy; definition, methods and means of study; orientation terms, anatomic terms (axes, planes, positions, anatomical terms); particularities of the biped; human body proportions; age stages and their characteristics; human morphotypes, races; gender differences after puberty.
2. Generalities of the skeletal system, the articular system and the muscular system.
3. Upper limb: topographic regions, vascularization, innervation.
4. Joints of the: vertebral spine, head and upper limb.
5. First week of development (fertilization, cleavage, segmentation, blastocyst formation, implantation and anomalies). 2nd week of development (bilaminar embryological disc). 3rd week of development (trilaminar embryological disc – intraembryonic mesoderm formation, notochord, trophoblast development).
6. Weeks 4th-8th of development (embryonic period). Derivatives of ectoderm, mesoderm, endoderm. Modeling the outer form of the embryonic body. Formation of primordial organs. Fetal period (L3-birth).

7. General organization of the trunk: walls, cavity, compartments. Mediastinum. Development of the walls of the trunk, of the coelom. Abnormalities.
8. Generalities of the respiratory system. Development of the respiratory system. Abnormalities.
9. Generalities of the cardiovascular system. Development of the cardiovascular system. Development of the heart. Abnormalities.
10. Blood supply and nerve supply of the thoracic walls and viscera.
11. Topography of anterolateral abdominal walls, vascularization, innervation.
12. Inferior limb: topographic regions, vascularization, innervation.
13. Joints of the inferior limb.
14. Clinical and radiologic anatomy of the thorax.

### ***II Semester***

15. Topographic regions of the head. Anatomico-clinical considerations.
16. Topographic regions of the neck. Anatomico-clinical considerations.
17. Innervation and vascularization of the head and neck.
18. Development of head and neck. Anomalies.
19. The endocrine system. The diffuse neuro-endocrine system. General presentation of the thyroid, parathyroid, suprarenal, parotid, submandibular and sublingual glands.
20. The oral cavity. The larynx. The nasal cavity. The paranasal sinuses.
21. General presentation of the abdomen: posterior wall, abdominal cavity.
22. General presentation of abdominal organs in situ; vascularization and innervation.
23. General presentation of abdominal organs in situ; vascularization and innervation - continuation.
24. Development of the digestive system. Anomalies.
25. General presentation of the urinary system. Development of the urinary system. Anomalies.
26. General presentation of the pelvis: walls, pelvic peritoneal cavity, pelvic subperitoneal space, pelvis subperitoneal space differentiated by sex.
27. General presentation of the genital system. Development of the genital system. Anomalies.
28. Recapitulation. Topographic sections.

### **Practical activities:**

1. Osteology
2. Dissection of the chest wall and upper limb
3. Chest dissection
4. Dissection of the abdominal wall and lower limb
5. The bones of the head
6. Head and neck dissection

7. Abdominal dissection

8. Pelvis – perineum

**Bibliography:**

1. Clinically oriented anatomy. 7<sup>th</sup> Edition 2014. ISBN-13: 978-1451119459, ISBN-10: 1451119453
2. Gray's Anatomy. The Anatomical Basis of Clinical Practice. 41<sup>st</sup> Edition 2016. ISBN: 978-0-7020-5230-9

**Evaluation – standardized exam**

- Written exam 50%
- Practical exam 40%
- Verification throughout the semester 10%

## BIOPHYSICS

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Biophysics</b>
<b>Course coordinator</b>	<b>Assoc. Prof. Petru Vlaic, MD, PhD</b>
<b>Department</b>	<b>Molecular Sciences</b>
<b>Discipline</b>	<b>Medical Biophysics</b>
<b>Course code</b>	<b>MED1102EN</b>

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities		Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/semester							
		L	PA	CI		PA	CI					
I	Compulsory	2	2	-	28	28	-	69	125	5	Written+ Practical exam	

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

**General objectives:**

- Acquiring knowledge about the physical mechanisms and phenomena in biological systems.
- Using applications of physical methods in the qualitative, quantitative and functional analysis of biological systems.
- Understanding the biophysical aspects in different functions and structures of the human body, at different levels of organization, in normal and pathological situations; assimilating general concepts concerning the physical processes involved in the functioning of our body
- Understanding the functioning principles of the methods, devices and appliances used in medical research and practice.
- Acquiring certain abilities and minimum skills in the usage of appliances or in the execution of experiments.

**Specific objectives:**

- Acquiring knowledge about the superficial tension of fluids, viscosity, and capillarity, thermal and electric phenomena in the human body.
- Acquiring the ability to explain how the human body works as a thermodynamic system and to apply the principle of energy conservation to the calculation of the body's energetic balance.

- Being able to explain, in physical terms, the creation of the potential differences in the cellular membranes and the electric properties of the membranes.
- Acquiring knowledge about the physic-chemical phenomena on which the cellular transport mechanisms are based.
- The critical evaluation of results and the correct usage of the International System of Units and Measurements in medicine.
- Being able to apply modern biophysical methods to the study of the membrane and the cellular processes. Response to medication.
- Acquiring knowledge about the principles of physical methods used for the micro-and macroscopic study of biosystems; the impact of physical factors on the functioning of biosystems.
- Being able to use radiations for diagnosis and therapy, as well as knowing all about their side effects. Radiation dosimetry.
- Acquiring scientific knowledge about the influence that physical factors have on the human body, especially ionizing radiations. The cellular mechanisms of the live tissue interaction with electromagnetic radiations. Radioprotection.
- Being able to apply related physical principles to some methods of investigation. Being able to explain the relative advantages and disadvantages of these investigation methods. The biophysical basic features of a few non-invasive methods of diagnosis and treatment:
  - Clinical scintigraphy: radioactive and radiopharmaceutical tracers, static and dynamic examination.
  - Ultrasounds: production and reception, the Doppler effect, applications in medicine.
  - X-rays in medicine: radioscopy, radiography, CT scan, radiotherapy.
  - Physical principles of Magnetic Resonance Imaging (MRI) and applications.
  - LASER- principles and applications in medicine.
  - Light polarization and its applications in medicine.
- Understanding the basic physical features of the biological phenomena involved in medical disciplines: cellular biology, physiology, pathophysiology, cardiology, neurophysiology, ophthalmology, radio diagnostic and medical imaging, nuclear medicine, oncologic radiotherapy, physiotherapy etc.
- Developing the ability to assimilate and define the necessary methodology for structuring a biological or clinical study, based on data provided by an experiment; processing and analyzing experimental results that will allow the elaboration of a scientific paper (report, article).
- Getting familiarized with the physical principles that grant the functioning of modern medical appliances, with the purpose of offering our graduates

the possibility to activate in domains where high-tech devices for non-destructive medical investigations and therapy are used.

### **Course content:**

#### **Bioenergetics (6 hours)**

*Thermodynamic systems, states and processes* - Equilibrium states and steady states. State functions. Gas law. Energy, the internal energy.

The first law of thermodynamics.

*Enthalpy*. The laws of thermochemistry. Hess' law. Standard enthalpy of combustion of foodstuffs.

*Entropy*. The second law of thermodynamics. Statistic interpretation of the third law of thermodynamics. Entropy and disorder. Entropy and biology.

*Thermodynamic potentials* - Free energy. Helmholtz free energy, Gibbs free energy. The direction of spontaneity and the criteria for equilibrium. The chemical potential. The standard free energy and the free energy of reactions occurring in metabolic pathways. The equilibrium constant. Factors deciding in spontaneity of reactions in living systems. Free energy of sequential (tandem) reactions. High-energy phosphate bonds. Standard free energy of hydrolysis of ATP, conditions affecting free energy of hydrolysis of ATP.

*Oxidation-reduction reactions*. Electrode reduction potentials, standard half cell potentials. Electrochemical conversion of energy. First type half cells and concentration cells. The pH. Oxidative phosphorylation and electron transport. Photophosphorylation. The chemiosmotic-coupling hypothesis.

#### **Molecular phenomena in liquid state (4 hours)**

*Liquid state* Vaporisation and condensation. The phase diagram

Colligative properties of solutions. Osmosis; osmotic pressure; cells as osmometers; Starling effect. Edema formation. Dialysis and ultra filtration.

*Fluid mechanics* hydrostatic pressure, Bernoulli's law. Law of Poiseuille. Application to blood flow. Viscosity, blood viscosity.

*Surface tension* surface tension at interfaces. Surfactants. Laplace law. Medical applications

#### **Molecular biophysics (6 hours)**

*Atom models*. Rutherford-Bohr atom. Spectral series. Bohr-Sommerfeld atom. Quantum numbers. Elementary approach to quantum mechanics: wave function, uncertainty principle,. Atomic orbitals. The periodic table.

*Chemical binding*.

Electronegativity. Hybridisation of molecular orbitals. Covalent binding; molecular orbitals; molecular energy levels. The dipolar moment. Metallic binding. Ionic binding. *Physical binding*

Hydrogen bonding and water structure; hydrophobic interactions; ionic interactions; dipolar (van der Waals) interactions.

*Biological macromolecules.* Levels of structure of biological macromolecules. Properties of water. Physical properties of polypeptides. Proteins  
*Techniques for the study of biological molecules* Optical techniques, hydrodynamic techniques, X-ray crystallography

### **Transport processes (4 hours)**

*Biomembranes* - Structure and functions of biomembranes. Membrane models. Composition. Lipids . Properties of lipids.

*Passive transport.* - Diffusion. Free-diffusion equations; diffusion coefficient. Diffusion through membranes; permeability coefficients of cell membranes. Overton's rule. Facilitated diffusion. Transport through channels. Channel types.

*Active transport in living systems.* Na-K-ATP and other active transport systems.

### **Basic physics of membrane potentials (4 hours)**

*The Nernst potential.* The Donnan equilibrium and potential. The diffusion potential. Goldman equation. The sodium-potassium pump.

*Action potential* - The resting membrane potential. Events that cause the action potentials. Phases of the action potential. The Na and K channels. Propagation of the action potentials. Synaptic transmission of nervous impulse.

### **Radiation biophysics (4 hours)**

*The primary interactions of ionizing radiation with substance.* The nature of radiations. Chemical and biological effects of non-ionizing radiation Effects of ionizing radiation on molecules: direct action; indirect action. Application of radiations in medicine: X ray radiography. Computed tomography

Radioisotopes as tracers. Scintigraphy. Positron emission tomography (PET)

*Actions of ionizing radiation on living cells.* Survival curves and target theory. Radiation hazard and protection.

#### **Practical activities:**

1. Determination of viscosity with the Oswald viscometer
2. Determination of surface tension with the Traube stalagmometer
3. Determination of density using the pycnometer and the immersion method
4. Determination of the specific heat of solid and liquid bodies. Determination of enthalpy variation in the dissolution process
5. The isoelectric point of the casein
6. The study of lenses
7. Determination of the electrochemical coefficient of copper
8. Determination of air humidity
9. Spectrocolorimeter Specol. Radiation absorption
10. Potentiometric determination of PH

11. Determination of the refractive index using the refractometer Abbe
12. The study of polarized light
13. Determination of microscopic dimensions using the ocular micrometer
14. Migration of polyelectrolytes in the electric field

**Bibliography:**

1. Bassaglia, Y., Biologie Cellulare, Ed. Maloine, 2004
2. Guyton, Arthur C., Textbook of Medical Physiology, W. B. Saunders Company, 2002
3. Splinter, Robert, Physics in Medicine and Biology, CRC Press 2010
4. Tabakov, S, Milano, F., Strand S.E., Lewis C., Sprawls P., Encyclopedia of Medical Physics, Vol. I, II, CRC Press 2013
5. Kane, Suzanne Amador, Introduction to Physics in Modern Medicine, second edition, CRC Press 2009
6. Davis, P.D., Parbrook G.D., Kenny G.N., Basic Physics and Measurement in Anaesthesia, Fourth Edition,
17. Petru Vlaic, Daniela Eniu, Medical Biophysics Laboratory Manual, Editura Medicală Universitară „Iuliu Hațieganu”, Cluj-Napoca, 2020

**Evaluation – standardized exam:**

- Written exam 70%
- Practical exam 20%
- Verification throughout the semester 10%

## CELL AND MOLECULAR BIOLOGY

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Cell and Molecular Biology</b>
<b>Course coordinator</b>	<b>Lecturer Lucian Frențescu, MD PhD</b> <b>Lecturer Adina Ancuța Chiș, MD PhD</b> <b>Lecturer Gheorghe Zsolt Nicula, MD PhD</b>
<b>Department</b>	<b>Molecular Sciences</b>
<b>Discipline</b>	<b>Cell and Molecular Biology</b>
<b>Course code</b>	<b>MED 1 1 03 EN</b>

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/semester								
		L	PA	CI	L	PA	CI						
I	Compulsory	2	2	-	28	28	-		69	125	5	Written+ Practical Ex.	

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

- teaching of the fundamental theoretical notions of Cell and Molecular Biology necessary for a physician
- laboratory practical skills' training necessary in the following years as well as in the medical practice.

### Specific objectives:

- gaining the skills necessary to understand the medical applications of the concepts taught, taking into account that we are in the age of cell and molecular medicine
- teaching the technique of light microscope use
- microscope's images interpretation emphasizing medical applications
- basic notions of the techniques of cell and molecular biology such as the cell fractioning by differential centrifugation, DNA extraction and separation by electrophoresis, and chromatography of membrane lipids.

### Course content:

1. Introduction to Cell and Molecular Biology.
2. General Notions about Cells.
3. Molecular Basis of the Chemical Organization of the Cell.

4. Cytoplasm Matrix.
5. Molecular Basis of the Cell Motility.
6. Molecular Biology of the Cell Membranes.
7. Nucleus.
8. Eukaryotic Chromosomes: Aspects of Cell and Molecular Biology with Medical Applications.
9. Cell Division.
10. Endoplasmic Reticulum.
11. Golgi apparatus.
12. Cell Secretion.
13. Lysosomes.
14. Peroxisomes.
15. Mitochondria.
16. Extracellular Matrix and Cell Adhesion.
17. Cell Recognition.
18. Cell Aging and Cell Death.
19. Central Dogma of Molecular Biology and Medical Applications.
20. Cancer Cell and Oncogenes.

**Practical activities:**

1. The optical microscope. Observation of cellular movements
2. Special techniques of optical microscopy with applications in medicine: immersion examination, dark background microscopy
3. Special techniques of optical microscopy with applications in medicine: phase contrast microscopy, fluorescence microscopy
4. Highlighting cellular components through specific (histochemical) stains and observing pigment inclusions
5. The study of cell division
6. Study of cellular organisms under the optical microscope
7. Obtaining isolated cells
8. Cell fractionation by differential centrifugation
9. DNA study: isolation, ultraviolet (UV) spectrophotometry and dosing
10. Separation of DNA fragments by agarose gel electrophoresis. Understanding of Polymerase Chain Reaction
11. Study of mitochondria: determination of oxygen consumption and oxidative phosphorylation
12. Extraction of lipids from membranes and separation of fractions by thin layer chromatography
13. Transmission electron microscopy applied in the study of the cell
14. Scanning electron microscopy. Electron microscopy images.

**Mandatory bibliography:**

1. Lecture notes;

**Supplementary bibliography:**

2. Bruce Alberts, Alexander Johnson, Julian Lewis, David Morgan, Martin Raff, Keith Roberts, Peter Walter. *Molecular biology of the cell*, sixth edition, Garland Publishing, Inc., New York, 2016;

3. Lodish H., Berk A., Kaiser C.A., Krieger M., Scott M.P., Bretscher A., Ploegh H., Matsudaira P., *Molecular Cell Biology*, 6th edition, W.H. Freeman, New York, 2007;

**Evaluation – standardized exam**

- Written exam                      70%
- Practical exam                    20%
- Individual portofolio            10%

## MEDICAL INFORMATICS AND BIOSTATISTICS

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Medical Informatics and Biostatistics</b>
<b>Course coordinator</b>	<b>Assoc. Prof. Mădălina Văleanu, MD PhD</b> <b>Lecturer Tudor Călinici, MD PhD</b>
<b>Department</b>	<b>Medical Education</b>
<b>Discipline</b>	<b>Medical Informatics and Biostatistics</b>
<b>Course code</b>	<b>MED1104EN</b>

Semester	Course Type	Lectures			Practical activities			Individual study			TOTAL	Credit	Evaluation
		hours/week			hours/sem.								
		L	PA	CI	L	PA	CI						
I	Compulsory	1	2	-	14	28	-	58	100	4	Written + Practical Exam		

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

The course focuses on the assimilation of the main information technology methods with applications in the medical field (medical office, databases, work on computer networks, etc.) as well as a basic method of statistical modeling and processing of medical data. At the end of the course, students will be able to correctly perform the basic statistical analysis, specific to the medical field using the computing technique and to present and interpret correctly obtained the results.

### Specific objectives:

At the end of the course, students will be able to:

- Search medical information in dedicated databases - PubMed, Cochrane, etc.
- Develop medical-specific documents with Microsoft Word
- Identify correctly the type of variables involved in a process of collecting medical data
- Collect medical data with Microsoft Excel
- Identify, based on the type of variables and specific objectives, the appropriate descriptive presentation of medical data and to do so using Microsoft Excel
- Identify in a clinical scenario the events that make up and establish their theoretical probability

- To correctly estimate different parameters in the population starting from a subset of the population
- Identify correctly the statistical methods to be applied for performing inferential statistical analyzes in the medical field and apply them using Microsoft Excel
- Interpret correctly the results of the statistical analyzes to apply them in the medical decision
- Show results of statistical analysis using Microsoft Office

**Course content:**

1. Introduction to medical informatics and statistics
2. Fundamental concepts: Information – Data – Hardware – Software – Internet – Medical Informatics
3. Introduction in statistics: Population - Sample and sampling methods - Data and variables
4. Descriptive statistics I: Measures of centrality & dispersion
5. Descriptive statistics II: Measure of localization & symmetry – Summarizing data with tables and graphs
6. Probabilities and their medical applications
7. Conditional probabilities. Independence of the events
8. Repetitive events. Random variables Probability distributions.
9. Point estimators and confidence intervals
10. Testing hypotheses I: Testing the statistical hypotheses – Steps, Errors, Critical region
11. Testing hypotheses II: Tests for means, Chi-square test
12. Testing hypotheses III: Corrections, ANOVA analysis
13. Correlation and regression analysis
14. Recapitulative course

**Practical activities:**

1. Organizational Measures. Guideline for using the network.
2. Editing medical documents with Microsoft Word.
3. Searching medical information. Presentation of medical information with PowerPoint.
4. Medical data management: Microsoft Excel databases, Formulas & Functions
5. Medical data management: Summarizing data with graphical representations
6. Medical data management: quantitative data
7. Medical data management: probabilities & contingency tables
8. Point Estimators & Confidence Interval

9. Statistical tests I - Means
10. Statistical tests II - Frequencies
11. Correlations and Regressions
12. Statistical analysis of medical data by example
13. Medical data analysis by example
14. Practical exam

### References

1. Rosner B. Fundamentals of Biostatistics. 8th ed. Boston, MA: Cengage Learning; 2015.
2. Drugan T, Bolboacă SD, Leucuța D, Boncro C, Călinici T, Văleanu M, Colosi H, Iancu M, Istrate D. Curs de Biostatistică Medicală. Editura Medicală Universitară „Iuliu Hațieganu”, Cluj-Napoca; 2018. ISBN 978-973-693-861-0
3. [https://www.info.umfcluj.ro/index.php?option=com\\_k2&view=itemlist&task=category&id=225:lab-mg-en&Itemid=1015&lang=en](https://www.info.umfcluj.ro/index.php?option=com_k2&view=itemlist&task=category&id=225:lab-mg-en&Itemid=1015&lang=en)

### Evaluation – standardized exam

- |                    |     |
|--------------------|-----|
| ▪ Theoretical exam | 70% |
| ▪ Practical exam   | 30% |

## BEHAVIORAL SCIENCES AND MEDICAL SOCIOLOGY

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Behavioral Sciences and medical sociology</b>
<b>Course coordinator</b>	<b>Lecturer Bogdan Nemeş, MD, PhD</b>
<b>Department</b>	<b>Medical Education</b>
<b>Discipline</b>	<b>Clinical Psychology</b>
<b>Course code</b>	<b>MED1105EN</b>

Semester	Courses type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	1	1	-	14	14	-	22	50	2	Written exam

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites:** -

**General objectives:**

- To acquire basic knowledge, attitudes and skills required for the assessment, understanding and changing human behaviors

**Specific objectives:**

At the end of the course, the student will be able to:

- Perform clinical assessment of cognitive functions, affectivity, motivation, personality
- Perform clinical assessment of behaviors and their risk level
- Assess attitudes
- Apply behavioral changes and understand the underlying background, based on learning theories
- Assess and adapt their attitude towards the patient, according to patient's level of psychological development

**Course content:**

1. Introduction – Mental processes. Human Cognitive system
2. Sensation, perception
3. Attention, memory
4. Thought, intelligence and language
5. Affectivity
6. Motivation
7. Synthesis mental processes: conscience and personality

8. Neurobiological basis of behavior
9. Instinctual behaviour (1): aggressivity, feeding, maternal instinct
10. Instinctual behaviour (2): sexual instinct, development of human sexuality
11. Learned behavior
12. Social psychology
13. Human psychological development (1): Stages of human development (psycho-sexual – Freud, cognitive - Piaget, psychosocial – Erikson), infant, toddler, preschool-aged and school-aged child
14. Human psychological development (2): adolescent, young adult, adult, senior; moral development

**Practical activities:**

1. Introduction
2. Sensation and perception
3. Attention and memory
4. Intelligence testing
5. Emotional intelligence
6. Motivation for change. Motivational interview
7. Personality assessment
8. The neurobiological basis of behavior
9. Eating, maternal instinct and aggression
10. Disorders of sexual instinct - Paraphilia
11. Applying learning mechanisms to change human behavior
12. Changing attitudes
13. Developmental problems in childhood
14. Developmental problems in adolescence and adult life

**References:**

1. Coman H, Nemeş B. Behavioral Sciences Lecture Notes (CD). Cluj-Napoca: Presa Universitară Clujeană; 2014.
2. Pinel JPJ, Barnes SJ. Introduction to biopsychology, 9th edition. Boston: Pearson; 2014.

**Evaluation: standardized exam**

- Written exam                      50%
- Practical exam                      50%

## FUNDAMENTALS OF CHEMISTRY

**Study domain:** Health  
**Study programme:** Medicine  
**Course:** Fundamentals of chemistry  
**Course entitled:** Prof. Ede Bodoki, MD, PhD  
**Department:** Pharmacy  
**Discipline:** Chemistry  
**Course code:** MED1106EN

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credits	Evaluation	
		hours/week			hours/sem.									
		L	PA	CI	L	PA	CI							
I	Compulsory	0,71	0,29	-	10	4	-	26	40	2	Colloqui			

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

Learning and using correctly the main principles underlying the general, inorganic and organic chemistry

### Specific objectives:

- Familiarize students with the theoretical aspects and practical application of the principles of general chemistry
- Gaining knowledge of the main physical and chemical characteristics of cations and anions with relevance to biology, medicine and pharmacy
- Gaining knowledge of basic principles of systematic analysis
- Understanding the principles and mechanisms of reaction that enable the selection of given techniques for quantification of the analytes
- Quantitative analysis of samples (inorganic and organic ions) of biomedical interest
- Writing and balancing chemical reactions and correctly performing the reactions used in the quantitative analysis of samples of biomedical importance
- Getting familiar with the main directions of research in the field biomedical analysis

Exercise the capacity of data synthesis and of bibliographic documentation

**Course content:**

**1.1. Introduction - The importance of chemistry in the biomedical field**

Scientific observation in chemistry - the chemical experiment

Quantities, units and symbols used in chemistry - International system of units, SI

**1.2. The structure of matter** - Atoms, ions, molecules – review of fundamental concepts of general chemistry; Chemical bonds (metallic, ionic, covalent); intra/intermolecular interactions: van der Waals forces, hydrogen bonds

**2. Classification of chemicals, classes of compounds**

Chemical elements and combinations - simple and composed substances

Classes of compounds: oxides, acids, bases, salts, metal complexes, biomolecules (carbohydrates, proteins, lipids, nucleic acids). Definition, general structure for each type of compound and their main properties. Examples, applications/implications of chemical compounds in the biomedical field.

**3. Disperse systems** - Generalities, classification of disperse systems. Solutions - properties. Solubility of substances and the dissolution process. Expression of solution concentrations. Applications.

**4. Chemical reactions** - General classification of chemical reactions; basic notions of thermodynamics and kinetics. Protolytic, oxidation-reduction, complexation, gas formation and precipitation reactions. Examples of reactions applied in biomedical field.

**5.1. Electrolytes** - Definition, classification. Equilibria in electrolyte solutions. Degree and constant of dissociation /ionization. Strong electrolytes, weak electrolytes. pH of aqueous solutions. Applications/implications of pH in the biomedical field.

**5.2. Allotropy / polymorphism** - Definitions/examples: carbon - diamond, graphite; fullerenes, nanotubes, graphene - applications in the biomedical field. Medicinal substances

**5.3. Isomerism** – Definition, types and examples of biomolecules.

**Practical activities:**

- 1.1. Safety rules of working in the chemistry laboratory. Rules of fire prevention and firefighting. First aid measures in case of accidents in the laboratory.
- 1.2. Solutions - practical aspects of preparing, mixing, diluting solutions of biomedical importance. Calculation exercises.
- 1.3. Instrumental (direct potentiometry) assessment of the pH of aqueous solutions.

2. Analytical methods (complexonometric titration, instrumental analysis) for the quantitative assessment of calcium ions. Calculations.

**References:**

1. Alan Jones, Chemistry: An Introduction for Medical and Health Sciences, John Wiley & Sons, 2005
2. Martin S. Silberberg, Principles of general chemistry, Ed. McGraw-Hill, New York, NY 10020. 2007.
3. P. Atkins, L. Jones, Chemical Principles, 4th edition, W.H. Freeman, 2008.
4. G.L. Miessler, D.A. Tarr, Inorganic Chemistry, 4th edition, Prentice Hall, 2011
5. Course outlines available on the Teams platform, lectures PowerPoint support, free on line resources
6. E. Bodoki, C. Cristea, R. Săndulescu, R. Oprean, Quantitative Analytical Chemistry, laboratory guidebook, Cluj-Napoca, 2013.
7. Analytical Chemistry 2.1 - A Collection of Free Digital Resources for Teaching Analytical Chemistry,  
[http://dpuadweb.depauw.edu/harvey\\_web/eTextProject/version\\_2.1.htm](http://dpuadweb.depauw.edu/harvey_web/eTextProject/version_2.1.htm)
8. Support materials available on the Teams platform, PowerPoint support

**Evaluation:**

- |               |     |
|---------------|-----|
| ▪ Theoretical | 80% |
| ▪ Practical   | 20% |

## MEDICAL BIOETHICS AND HISTORY OF MEDICINE

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Bioethics and History of Medicine</b>
<b>Course coordinator</b>	<b>Prof. Cristian Bârsu, MD. PhD</b> <b>Lecturer Horațiu Crișan, MD PhD</b>
<b>Department</b>	<b>Medical Education</b>
<b>Discipline</b>	<b>Skills - Humanistic Sciences</b>
<b>Course code</b>	<b>MED 1 1 07 EN</b>

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	1	0,5	-	7	7	-	36	57	2	Written + Practical Exam
					7						

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites: -**

**General objectives:**

### I. for History of Medicine

After the course the student will be able to:

- learn the most important milestones in the history of medical specialties;
- explain the basics of the history of medicine with other students;
- provide famous examples of medical humanism;
- evaluate the importance of the history of medicine as a basic element of the medicinal - medicinal and medicinal - pharmacist relationship;
- present a general point of view on multiculturalism in medicine.

### II. for Bioethics

- Assimilating fundamental notions in the field of bioethics and history of medicine with the purpose of identifying the ethical issues in medicine and the healthcare system.
- Justifying ethical decisions that could be taken in these situations.
- Applying ethical norms from the main documents in the field and the scientific literature.

**Specific objectives:**

#### I.for the History of Medicine

After the course the student will be able to:

- make the notional framework necessary to integrate the notions acquired in various disciplines;
- describe the main aspects and significances of the evolution of certain branches of general medicine throughout the centuries.

## **II. for Bioethics**

- Distinguishing between describing and evaluating a particular situation and delimiting the ethical themes.
- Reflecting on the cases presented.
- Assimilating the main approaches in bioethics.

### **Course content:**

#### **History of Medicine**

1. Generalities in the history of medicine. Educational objectives. History of medicine as a sphere of interference.
2. The European dimension of Romanian medicine
3. The Cluj School of Medicine. Definitive and first aspects to the medicine of Cluj. The most important teachers in the past of this medical school.
4. Overview of the history of anatomy. Anatomy in Antiquity. Anatomy in the Middle Ages. Anatomy at the Renaissance.
5. Pages in the history of physiology. Precursors of physiology. Physiology in the Renaissance, in the 17<sup>th</sup> century and in the 18<sup>th</sup> century.
6. History of histology in the 17<sup>th</sup> and 18<sup>th</sup> centuries. The prelude of histology in the 17<sup>th</sup> century. 6. 2. Histology in the 18<sup>th</sup> century.
7. Moments of the history of classical medical ethics. The oath of Hippocrates. The prayer of Maimonides. Medical ethics of modern times.

#### **Bioethics**

Introductory notions: definitions, history and foundations of bioethics.

1. 1. Terminology: ethics, morals, bioethics.
1. 2. Definitions of bioethics
1. 3. The birth of the term „bioethics”
1. 4. The purpose of bioethics
2. The principles of medical bioethics
  2. 1. The principle of autonomy
  2. 2. The principle of non-maleficence (primum non nocere)
  2. 3. The principle of beneficence
  2. 4. The principle of justice
3. The concept of „person” and its relevance in bioethics
  3. 1. The concept of person. Definitions and meanings
  3. 2. Main approaches in bioethics
  3. 3. Reasons for which certain human beings are not regarded as „persons”
4. The issue of informed consent

- 4.1. The consent of the informed patient.
4. 2. Accomplishing consent.
4. 3. Exceptions from the rule of informed consent.
4. 4. Advanced directives as limits to accomplishing informed consent.
5. Bioethical aspects of organ transplant
  5. 1. The principles of organ removal and transplantation
  5. 2. Controversial aspects of organ removal and transplantation
  5. 3. Types of transplantation: autotransplantation, allotransplantation, xenotransplantation
  5. 4. The legal constraints in medical practice and Romanian legislation
6. Death. Euthanasia. Assisted suicide
  6. 1. Definition and „meaning of death”
  - 6.2. Distinctions among euthanasia, assisted suicide, therapeutic abandonment, therapeutic fierceness.
  6. 3. Is the „right to die” guaranteed?
  6. 4. Ethical aspects of legalizing euthanasia and medically assisted suicide
7. Assisted reproduction technologies
  - 7.1. Definition and traits
  - 7.2. Legal and ethical aspects regarding the identity of the embryo
  - 7.3. The tutelage of the embryo’s rights
  - 7.4. Ethical aspects regarding assisted reproduction technologies

**Practical activities:**

**Bioethics**

1. Introduction. The principles of medical ethics
2. The notions of confidentiality and the disclosure of the truth as professional obligations
3. Criteria for establishing decision-making capacity
4. Refusal of treatments and application of advance directives
5. Relevant criteria in the allocation of limited medical resources Organ transplantation ethics
6. The principles of double effect in end-of-life situations
7. Professional responsibilities in the context of appealing to medically assisted reproduction methods.

**References for History of Medicine:**

1. Jackson M. (editor). A global history of medicine, Oxford University Press, Oxford, 2018
2. Jauhar S. Heart: a history, Farrar, Straus and Giroux Publishers, 2018.

3. Van de Graaff. History of Anatomy  
<https://fac.ksu.edu.sa/sites/default/files/cha6bc-1.pdf>

**References for Bioethics:**

1. Harris J., The Value of Life. An Introduction to Medical Ethics, Routledge, London, 1985.
2. Beauchamp T., James F. Childress, Principles of biomedical ethics, Oxford University Press, New York, 1989.
3. Singer P., and A. M. Viens (ed.), The Cambridge Textbook of Bioethics, Cambridge University Press, Cambridge, 2008.
4. Singer P. (ed.), Applied Ethics, Oxford University Press, Oxford, 1986.

**Evaluation:**

- Theoretical exam 80%
- Practical exam 20%

## BASES OF MEDICAL COMMUNICATION

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Basic Medical Communication</b>
<b>Course coordinator</b>	<b>Assoc. Prof. Codruța Alina Popescu, MD PhD</b>
<b>Department</b>	<b>Medical Education</b>
<b>Discipline</b>	<b>Skills - Humanistic Sciences</b>
<b>Course code</b>	<b>MED1108EN</b>

Semester	Courses type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.								
		L	PA	CI	L	PA	CI						
I	Compulsory	1	1	-	14	14	-		22	50	2	Written + practical Exam	

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites:** -

**General objectives:**

At the end of the course, student will acquire the necessary skills for effective communication with patients and their relatives and will be able to put into practice the theoretical and applied notions from the materials presented in the course.

**Specific objectives:**

At the end of the course the student should be able to:

- Demonstrate competency in communication skill
- Conduct comprehensive and focused interviews
- Establish a therapeutic doctor – patient relationship and communicate verbally and non-verbally in a manner that facilitates good patient care.
- Deal with sensitive psychosocial issues such as sexuality
- Work with patients in challenging situations such as breaking bad news and conflict management such as the angry patient

**Course content:**

1. The importance of communication in medicine. Theoretical models of communication
2. Non-verbal communication-part 1
3. Non-verbal communication - part 2
4. Verbal communication
5. Communication tools used in the clinical interview

6. The structure and functions of the medical consultation. history
7. Public communication about health
8. Models of health behaviors
9. Difficult communication situations: angry patients
10. Communicating bad news
11. Communication with children
12. Communication with the elderly
13. Communication with people with disabilities
14. End-of-life communication

**Practical activities:**

1. Presentation of students
2. Use of simple words
3. Communicating the bad news - role play
4. Communicating the bad news video part 1
5. Communicating the bad news video part 2
6. Oral presentation-analysis of a public health campaign aimed at destigmatizing mental illness (team activity)
7. Oral presentation-analysis of a public health campaign aimed at destigmatizing mental illness (team activity)
8. Oral presentation-analysis of a public health campaign aimed at destigmatizing mental illness (team activity)
9. Observation sheet: the personal and social history of the patient
10. Clinical interview (role play)
11. Clinical interview (role play)
12. Clinical interview (role play)
13. Management of angry patients
14. Feedback

**References:**

1. Lloyd, M Bor, R. (2009-03-01). Communication Skills for Medicine . Elsevier Health. Kindle Edition.
2. Lloyd, M, Bor, R, Noble, L. Clinical communication skills in medicine, Elsevier, 2019.
3. Polack PE, Avtgis Theodore. Medical communication, Defining the discipline, Kendall Hunt, 2011.
4. Cashman, S; Greene, J, Hearfield, H. (2011-11-20). History Taking: Key Role Play for OSCEs, Doctors Academy Publications. Kindle Edition.

**Evaluation**

- |                    |     |
|--------------------|-----|
| ▪ Theoretical exam | 50% |
| ▪ Practical exam   | 50% |

## DESCRIPTIVE BIOCHEMISTRY

**Study domain:** Health  
**Study programme:** Medicine  
**Course:** Descriptive Biochemistry  
**Course entitled:** Lecturer Tiberiu Nistor, PhD  
**Department:** Molecular Sciences  
**Discipline:** Medical Biochemistry  
**Course code:** MED1210EN

Semester	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	2	-	28	28	-	69	125	5	Written+ practical Exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

- The accumulation of basic knowledge necessary for understanding the structure of the macromolecular compounds and biochemical processes in living organisms.
- The students need to be prepared for the correct interpretation of the biochemical analysis and for establishing connections allowing the understanding of physiological and pathological processes at a molecular level.

### Specific objectives:

The knowledge of basic biochemical principles important in medicine:

- The structure and function of amino-acids and proteins important in the human body
- Receptors' structure and action mechanism
- Enzymes as catalysts of metabolic processes in living organisms and their medical implications
- Vitamins and coenzymes: structure, role and deficiency
- Nucleic acids: structure, role, transmission and expression of genetic information

**Course content:**

1. Introduction in biochemistry. Water – the major component of the cell . Acids and bases: general aspects. Henderson – Hasselbalch equation
2. Amino acids: Structure and importance. Properties of amino acids.
3. Structure of proteins: Primary structure of proteins. Secondary structure of proteins. Tertiary structure of proteins. Quaternary structure of proteins
4. Types of proteins: Myoglobin, Hemoglobin, Immunoglobulins, Collagen, Elastin
5. Receptors: General aspects, Types of receptors and their characteristics
6. Enzymes: General aspects, Classification of enzymes, Structure of enzymes, Enzyme specificity, Enzyme kinetics, Types of enzyme inhibition, Control of enzyme activity, Isoenzymes
7. Vitamins and coenzymes: Water soluble vitamins (B<sub>1</sub>, B<sub>2</sub>, Niacin, Biotin, Pantothenic acid, B<sub>6</sub>, Folic acid , B<sub>12</sub>, C). Lipid soluble vitamins (A, D, K, E)
8. Nucleic acids: General aspects, Nitrogenous bases, Nucleosides, Nucleotides, Structure and types of DNA , Structure and types of RNA
9. Storage and expression of genetic information: DNA replication, DNA transcription (RNA synthesis), Genetic code, RNA translation (Protein synthesis)

**Practical activities:**

1. Equipment used in the biochemistry laboratory
2. pH meter. Buffer solutions, isoelectric pH
3. Titration of acids and amino acids
4. Spectrophotometric dosing methods
5. Dosage of total serum proteins
6. Denaturation of proteins
7. Chromatographic methods of analysis
8. Affinity chromatography
9. Ion exchange chromatography
10. Thin layer chromatography
11. Serum protein electrophoresis
12. Determination of kinetic parameters of enzymes
13. Determination of the inhibition constant in the case of competitive and non-competitive inhibition
14. Determination of enzymatic activity. The influence of pH on enzymatic activity

**Mandatory reference:**

1. Tiberiu Nistor. Basics in Descriptive Biochemistry Third Edition. Ed.Casa Cartii de Stiinta, Cluj-Napoca 2019, ISBN 978-606-17-1443-8
2. Nistor Tiberiu. Medical Biochemistry A Practical Approach Second Edition. Ed. Casa Cartii de Stiinta, Cluj-Napoca 2018, ISBN 978-606-17-1289-2

**Evaluation:**

- Theoretical exam 75%
- Practical exam 25%

## PHYSIOLOGY

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Physiology, 1<sup>st</sup> year</b>
<b>Course coordinator</b>	<b>Assoc. Prof. Ioana Bâldea, MD, PhD</b>
<b>Department</b>	<b>Functional Sciences</b>
<b>Discipline</b>	<b>Physiology</b>
<b>Course code</b>	<b>MED1211EN</b>

Semester	Course type	Lectures			Practical activity			Individual study	TOTAL	Credits	Evaluation
		Hours/week			Hours/semester						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	2	-	28	28	-	69	125	5	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

### Pre-requisites: -

### General objectives:

- Learning and understanding of some biological mechanisms of high complexity and difficulty
- Functional exploration of body's systems
- Development of an observation sense and critical thinking, that are essential for the future's medical profession

### Specific objectives:

- Acquiring of medical terms, of the necessary knowledge for integration of the functions from the molecular to general level, from the tissue to the organ, to understand the functionality of different organs, systems, and the interactions amongst them
- Training to properly use of the devices and laboratory materials, including the computerized methods, to investigate some physiological mechanisms and some physiological constants and parameters
- Acquiring of the capacity to synthesize the studied notions, and to search for the information in the reference's material
- Training to interpret the data found in the information/reference's sources

### Course content:

1. Homeostasis of the internal environment. Fluid compartments of the human body.

2. Membrane transport mechanisms.
3. Physiology of excitable tissues
4. Neuron properties.
5. Smooth muscle fiber. Skeletal muscle fiber.
6. Physiology of the respiratory system: functional role of the upper respiratory airways.
7. Mechanics of pulmonary ventilation. Gaseous exchange through respiratory membrane.
8. Transport of respiratory gases in the blood. Nervous and humoral regulation of respiration.
9. Morpho-functional particularities of digestive system. Salivary secretion. Mastication. Deglutition.
10. Gastric digestion.
11. Intestinal digestion.
12. Pancreatic exocrine secretion. Bile secretion.
13. Colon
14. Absorption along the digestive tract. Motor function of alimentary tract.

**Practical activities:**

1. The influence of osmotic pressure on the red blood cell volume
2. Neuronal simulations: excitability threshold, summation. Neuronal simulations: driving speed, the effect of anesthetics
3. Muscle simulations: motor plate and muscle fatigue. Muscle simulations, shaking, tetanus
4. Electromyogram (BIOPAC)
5. Microscopic examination of saliva. Salivary pH. Identification of the salivary mucin. Identification of salivary KSCN. Identification of salivary phosphates
6. Identification of calcium in saliva. Salivary amylase dosing. Thermolability of salivary amylase
7. The influence of pH on the activity of salivary amylase. Gastric acid dosing
8. Pneumogram (BIOPAC)
9. Respiratory simulations: surfactant
10. Respiratory simulations: pleural emptying
11. Respiratory simulations: the diameter of the airways
12. Spirometry
13. Preparation of the practical exam. Analysis reports.

**References:**

1. Guyton AC, Hall JE. Textbook of Medical Physiology, Elsevier, 2020
2. Ganong WF. Review of Medical Physiology, McGraw-Hill Education, 2016.
3. D R Mitrea, R Orasan, Elementary Human Physiology, Ed. Techno Medical 2009, ISBN: 978-606-8030-57-9
4. Merali Z, Woodfine JD(eds). Essential MedNotes 2016. 32<sup>nd</sup> ed. Toronto

Notes for Medical Students, Inc, Toronto, 2016.

4. DR Mitrea, Human Physiology, Laboratory tests, 2006, ISBN (10) 973-7865-24-3, Ed Techno Media, 2006, Sibiu

**Evaluation:**

- Theoretical exam                      80%
- Practical exam                         20%

## FIRST AID

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Medical First Aid  
**Course coordinator:** Lecturer Vasian Horațiu, MD, PhD  
 Assoc. Prof. Cristina Petrișor, MD, PhD  
**Department:** Surgery  
**Discipline:** AIT I and AIT II  
**Course code:** MED1212EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	1	1	-	14	14	-	22	50	2	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

At the end of the course, students will be able to apply general measures regarding the saviour's safety and to provide first aid in case of environmental emergencies, trauma and acute intoxications.

### Specific objectives:

At the end of the study module, students will be able to:

1. Recognize the cardiorespiratory arrest, apply basic life support measures and work as part of a team during resuscitation protocol
2. Be familiar with the main principles of saviour's safety
3. Recognize the signs and symptoms of hypothermia, frostbite, insomnia, burns and apply first aid measures
4. Recognize and apply first-aid measures in particular situations: drowning, electrocution, hanging, motion sickness and altitude, avalanches, lightning
5. Recognize and apply first aid measures in the case of: bite of wild animals and viper, insect bites
6. Recognize and give first aid in case of acute drug intoxications, fungi, alcohol, carbon monoxide
7. Perform a primary assessment of the traumatized patient and provide first aid to this category of patients (immobilization and transport)
8. Perform simple haemostasis methods for bleeding
9. Use the first aid kit

**Course content:**

1. General concepts of first aid. The chain of survival, concepts of saviour's safety. First aid kit.
2. Cardiorespiratory arrest - recognition and manoeuvres of cardiopulmonary resuscitation. Applying basic life support measures (Part 1)
3. Cardiorespiratory arrest - recognition and manoeuvres of cardiopulmonary resuscitation. Applying basic life support measures (Part 2)
4. Trauma: assessment, immobilization, transport and haemostasis measures. Skeletal and soft tissues trauma burns, crushing.
5. Environmental emergencies: burns, caloric shock, hypothermia, frostbite, avalanche, drowning, electric shock, lightning, hanging, motion sickness and altitude
6. Environmental emergencies: wild animal bite, viper bite, insect and jellyfish sting
7. Acute poisoning (drugs, toxic plants, fungi, carbon monoxide, alcohol)

**Practical activities:**

1. Cardiorespiratory resuscitation, basal vital support.
  - Desobstruction of the airways (hyperextension of the head, subluxation of the mandible, deconstruction in the patient with mechanical asphyxia)
  - Safety side position
2. Cardiorespiratory resuscitation - basal vital support. Artificial ventilation mouth - mouth, mouth - nose
3. Cardiorespiratory resuscitation - basal vital support
  - External cardiac massage
  - Initiation in semi-automatic defibrillation
4. Practical demonstration - first aid kit, fracture immobilization, wound toilet, hemostasis
5. Subcutaneous and intramuscular injection technique
6. Providing first aid in case of heat shock or hypothermia, insect stings
7. Recap. Teamwork scenarios during resuscitation maneuvers

**References:**

1. Mirali S, Seneviratne A. Toronto Notes 2020 (Ed 36). [https://www.fireup.cc/up/toronto\\_2020.pdf](https://www.fireup.cc/up/toronto_2020.pdf)
2. European Resuscitation Council Guidelines for Resuscitation 2015.
3. European Resuscitation Council COVID-19 Guidelines. Aprilie 2020. <https://www.erc.edu/covid>
4. Natalia Hagău , Constantin Bodolea, Dan Dîrzu, Cristina Pertisor, Sebastian Trancă. Medical First Aid. Course for 1st year Medicine and Dental Students. Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca 2016
5. [www.emedicine.com/emerg/index.shtml](http://www.emedicine.com/emerg/index.shtml)

6. The International Federation of Red Cross and Red Crescent Societies (IFRC). International first aid and resuscitation guidelines 2016 for National Society first aid programme managers, scientific advisory groups, first aid instructors and first responders. <https://www.firstaieducation.net/2016-ifrc-first-aid-and-resuscitation-guidelines>.

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## ACADEMIC INTEGRITY AND ETHICS. MEDICAL PROFESSIONALISM

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Academic integrity and ethics. Medical professionalism  
**Course coordinator:** Prof. Anca Dana Buzoianu, PhD  
**Department:** Functional Sciences  
**Discipline:** Pharmacology  
**Course code:** MED1213EN

Semester	Courses Type	Practical activities			Practical activities			Individual study	TOTAL	Credits	Evaluation
		Lectures	hours/week	hours/sem.	Lectures	hours/week	hours/sem.				
		L	PA	CI	L	PA	CI				
II	Compulsory	1	0.5	-	14	7	-	29	50	2	Written exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

Students' knowledge of the issue of ethics and academic integrity in the medical university academic environment and in medical scientific research.

### Specific objectives:

- Acquiring a set of concepts and developing attitudes consistent with ethical, deontological and good medical practices
- Developing the ability to identify ethical issues and respond through active involvement in reporting and resolving them
- Creating the habit of identifying solutions and using or developing tools for solving ethical problems, both within the academic scientific and medical community

### Course content:

1. Fundamental concepts.
2. Ethics in academia • Moral University • Regulations on ethics in the university • Moral and etiquette rules in the medical academic space
3. Ethics in academia • Public accountability of members of the academic community • Public life, normative behavior, social duty • Forms of ethical and deontological deviations
4. Institutional tools for promoting academic ethics.
5. Research ethics.

6. The ethics of publishing and communicating science • good practices in scientific publishing, peer review open access policy, copyright.
7. The ethics of publishing and communicating science • plagiarism, falsification and fabrication of data, ghost writing, self-plagiarism, authorship of scientific articles

**Practical activities**

1. Ethical academic conduct
2. Ethical academic conduct in contact with patients
3. Ethical realization of themes, works or projects
4. Developing an inclusive ethical climate

**References:**

Lectures - handouts/electronic format

**Evaluation: standardized exam**

- evaluation during the semester 100%

## MEDICAL PSYCHOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Medical Psychology  
**Course coordinator:** Lecturer Bogdan Nemeş, PhD  
**Department:** Medical Education  
**Discipline:** Medical Psychology  
**Course code:** MED1214EN

Semester	Courses Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	1	1	-	14	14	-	47	75	2	Written exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Behavioural sciences. Medical Sociology

### General objectives:

- To acquire basic knowledge, attitudes and skills regarding the psychological implications of medical practice.

### Specific objectives:

At the end of the course, the student will be able to:

- Choose and implement appropriate models of medical team – patient relationship
- Evaluate reaction to illness and facilitate sick role adoption
- Implement psychological management of patients undergoing diagnostic process
- Show skills to ensure therapeutic adherence and facilitation of healthy lifestyle in patients
- Show appropriate stress management, bio-psycho-social pain management, crisis management – including community crisis, suicidal crisis
- Show appropriate skills for the psychological management of terminal and oncologic patients, and bereavement

### Course content:

1. Introduction. Basic psychopathology notions.
2. Biopsychotypology
3. Normal – abnormal. Health – illness.

4. Doctor – patient relationship.
5. Stress – health – illness.
6. Crisis and crisis intervention.
7. Suicide.
8. Psychology of death and dying.
9. Pain psychology.
10. Iatrogenic conditions.
11. Compliance and adherence to treatment.
12. Empathy.
13. Health psychology.
14. Basic notions of psychotherapy.

### **Practical activities**

1. Assessment of psychological functioning
2. Interview to assess the personality of the patient
3. Role of the doctor in shaping a more comprehensive and accurate representation of illness
4. Bio-psycho-social model in medicine
5. Specificity of relating to difficult patients: anxious, phobic
6. Specificity of relating to difficult patients: obsessive, paranoid
7. Specificity of relating to difficult patients: depressive, histrionic
8. Specificity of relating to difficult patients: aggressive, incarcerated
9. Assessment of stress. Management of burnout
10. Suicide crisis intervention
11. Bereavement reaction
12. Therapeutic iatrogenies
13. Assessment of therapeutic compliance
14. Empathy in the doctor – patient relationship

### **Bibliography:**

1. Pinel JPJ, Barnes SJ. Introduction to biopsychology, 9th edition. Boston: Pearson; 2014.
2. Coman H, Nemeş B. Medical Psychology Lecture Notes (CD). Cluj-Napoca: Presa Universitară Clujeană; 2014.

### **Evaluation: standardized exam**

- Written exam 60%
- Practical exam 40%

## PROBLEM BASED LEARNING

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Problem based learning – 1<sup>st</sup> year</b>
<b>Course coordinator</b>	<b>Lecturer Traian Oniu, MD, PhD</b>
<b>Department</b>	<b>Medical Education</b>
<b>Discipline</b>	<b>Problem based learning</b>
<b>Course code</b>	<b>MED1215RO</b>

Semester	Courses Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	-	2	-	-	28	-	47	75	3	Colloqui

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites:** Anatomy, Physiology, Biochemistry, Cell Biology, Medical Psychology, Bioethics

### General objectives:

The development of cognitive and psychomotor skills necessary to identify relevant information, in order to integrate fundamental knowledge in a clinical context, to assure communication and collaboration in groups in order to solve specific clinical situations.

### Specific objectives:

- The acquisition of fundamental knowledge in an integrated manner and in a clinically relevant context
- Early contact with clinical problems and the assimilation of cultural values for medical profession
- Clinical thinking skills' development
- Independent and efficient learning skills development
- The development of a strong internal motivation for learning and professional fulfillment
- The development of the ability to communicate effectively and work in team

### Practical activities:

1. Introduction to PBL
2. Type 2 diabetes mellitus - part 1
3. Type 2 Diabetes - Part 2
4. Prostate Cancer - Part 1

5. Prostate Cancer - Part 2
6. Hepatitis B Virus Infection - Part 1
7. Hepatitis B virus infection - Part 2
8. Acute appendicitis - part 1
9. Acute appendicitis - part 2
10. Type 1 diabetes mellitus - part 1
11. Type 1 Diabetes Mellitus - Part 2
12. Asthma - Part 1
13. Asthma - Part 2
14. Feed-back assessments on cases, facilitator and students

**Teaching – learning methods:**

1. Conversation
2. Conversation with the involvement of all group members
3. Case Study
4. Fostering interaction between group members
5. Encourage the free expression of opinions and collaboration between individuals in order to solve tasks
6. Setting specific tasks to group members

**References:**

The bibliography required to solve the cases will be identified by the students; identifying it is one of the purposes of the PBL method. This must be recent and relevant and critically assessed from the perspective of EBM (Evidence Based Medicine)

**Evaluation**

- Colloquy for pass/fail 100%

## ROMANIAN LANGUAGE

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Romanian language  
**Course coordinator:** Lecturer Anca Ursa  
 Lecturer Nora Mărcean  
**Department:** Medical Education  
**Discipline:** Modern Languages Applied to Medicine  
**Course code:** MED1216EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	-	2	-	-	28	-	22	50	2	-
II		-	2	-	-	28	-	22	50		Exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** -

### General objectives:

- integrating the four communication skills (listening, reading, speaking, writing);
- developing skills in academic and medical language;
- developing team-work skills using pair and group-work;
- interdisciplinarity: raising ethical awareness of students' future profession.

### Specific objectives:

At the end of the course, students will be able to:

- introduce and speak about themselves;
- ask for and give information in everyday situations;
- express preferences, agreement and disagreement;
- speak about their daily routine;
- name the body parts;
- describe pain;
- speak about their family.

### Practical activities:

1. *I am a UMF student!* Phonetics: the alphabet, sounds and groups of sounds specific to Romanian language, stress and intonation.

2. *I am a UMF student!* Culture and civilization: Romanian geography and famous Romanian people.
3. *Let's meet each other!* Communication: being polite vs. being familiar; introducing yourself. Vocabulary: countries, capitals, nationalities, greetings.
4. *Let's meet each other!* Grammar: personal pronouns in the Nominative case, politeness pronouns, the verbs to be and to have, the numbers from 1 to 10. Writing: personal presentation
5. *Student life.* Communication: asking for and giving directions (taxi/ university/ train station/ airport), expressing time, speaking about the schedule.
6. *Student life.* Vocabulary: the date, the hour, the weather, daily/ weekly schedule.
7. *Student life.* Grammar: the cardinal numerals.  
Writing: describing the weather back home.
8. *I and my career.* Communication: doctor-patient dialogue, expressing a wish.
9. *I and my career.* Vocabulary: professions and specific objects.  
Grammar: the noun (gender and number), how much? /how many?  
Writing: describing a person.
10. *The rhythm of life.* Communication: thanking, asking for permission, expressing agreement.
11. *The rhythm of life.* Vocabulary: relaxation, daily activities.  
Grammar: the verb (1st and 4th conjugation), frequency adverbs.  
Writing: filling up a form, weekly schedule.
12. *Tastes and specificity.* Communication: client-seller dialogue.  
Vocabulary: fruits and vegetables, expressing quantity, the menu.
13. *Tastes and specificity.* Grammar: the definite and indefinite article, quantity adverbs (a lot, a little, all), collective numerals (both). Irregular verbs, the verb to like, frequency adverbs.  
Writing: the shopping list.
14. 1<sup>st</sup> semester assessment.
15. *Special moments, people and places.* Communication: dialogue with the travel agent, orientation, reading a map, expressing opinion. Vocabulary: means of transport, holidays (activities and tourist attractions), important institutions and buildings.  
Grammar: the verb (2nd and 3rd conjugation), prepositions and time adverbs.  
Writing: the post card, the poster.
16. *Clothes, style and attitude.* Communication: shopping, making recommendations, expressing like/ dislike, payment options, describing a person (physical appearance, behaviour).  
Grammar: the adjective (1-4 forms).  
Writing: describing a person (physical appearance, behaviour).

17. *Clothes, style and attitude*. Vocabulary: outfits, types of fabric, colours, physical characteristics of a person, qualities, faults, emotions, idiomatic expressions with colours.

18. *You are what you do*. Vocabulary: tourist destinations, renting a house, daily schedule.

Grammar: types of places, types of rooms in a house, furniture items, appliances, daily schedule.

19. *You are what you do*. Writing: prepositions expressing spatial relations, verbs in the reflexive voice.

Communication: renting announcements, letter to the family.

20. „*Fugit irreparable tempus*.” Communication: speaking about a past experience, about the life and work of a famous person, about childhood memories, the holiday schedule.

21. „*Fugit irreparable tempus*.” Vocabulary: stages of life/ of a relationship, expressing time, domestic animals, activities associated with holidays.

22. „*Fugit irreparable tempus*.” Grammar: past tense simple, reflexive verbs, the verb to like, adverbs (then, afterwards, etc.).

Writing: life of a famous person, short story.

23. *Mind, body and soul*. Communication: at the doctor's, doctor-patient dialogue, expressing opinion.

24. *Mind, body and soul*. Vocabulary: sports, physical exercises, the human body (external organs).

Grammar: to be hurt/ to be bothered by/ to be annoyed by.

Writing: message, short presentation.

25. „*Medicine is science and consciousness*” (*Iuliu-Hațieganu*)

Communication: at the doctor's, doctor-patient dialogue, giving advice, forbidding, expressing a wish, speaking about what one knows/ doesn't know to do.

26. „*Medicine is science and consciousness*” (*Iuliu-Hațieganu*). Vocabulary: medical professions, specific objects, professional responsibilities.

Grammar: verbs in the subjunctive mode.

Writing: writing a diary page.

27. *Looking into the future*. Communication: the society and the future, expressing conditioning.

Vocabulary: words expressing future, future plans.

Grammar: the literary future/ the popular future.

Writing: personal future plans, the contents of a magazine.

28. Summative assessment.

## References:

1. Andreica A, Băgiag A, Tomoiagă A, Coiug A, Gogâță C, Ursa A, *Limba română pentru debutanți. Nivel A1*. Ediția a II-a (revizuită și adăugită), Cluj-Napoca, Editura Medicală Universitară „Iuliu Hațieganu”, 2019.

2. Andreica, A, Băgiag, A, Tomoiagă, A, Coiug, A, Gogâță, C. *Bazele limbii române. Nivel A1.2*, Cluj-Napoca, Editura Medicală Universitară "Iuliu Hațieganu" Cluj-Napoca, 2018.
3. Common *European Framework* of Reference for Languages, 2003. URL: [http://www.coe.int/t/dg4/linguistic/source/framework\\_en.pdf](http://www.coe.int/t/dg4/linguistic/source/framework_en.pdf).
4. Common European Framework of Reference for Languages: Learning, teaching, assessment. Companion Volume with new descriptors. Provisional edition, September 2017, URL: <https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/168074a4e2>.
5. *Gramatica de bază a limbii române (GBLR)*, București, Ed. Univers Enciclopedic, 2010.
6. Kohn, D., *Puls. Limba română pentru străini*. Iași, Ed. Polirom, 2009.
7. Platon, E., Sonea, I., Vîlcu, D. *Manual de limba română ca limbă străină (RLS). A1-A2*. Cluj-Napoca, Casa Cărții de Știință, 2012.
8. Platon, E.; Sonea, I.; Vasiu, L.; Vîlcu, D. *Descrierea minimală a limbii române. A1, A2, B1, B2*, Cluj-Napoca, Editura Casa Cărții de Știință, 2014.

**Evaluation:**

- Written exam 34%
- Practical exam 33%
- Verification throughout the semester 33%

## SPORTS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Physical Education and Sport – I<sup>st</sup> year  
**Course coordinator:** Associate professor PhD, Mihai Ludovic Kiss  
**Lecturer PhD Sergiu David**  
**Department:** Medical Education  
**Discipline:** Physical Education

Sem.	Course type	Lectures			Practical activities			Individual study			TOTAL	Credit	Evaluation
		hours/week			hours / semester								
		L	PA	CI	L	PA	CI						
I	Compulsory	-	1	-	-	14	-	-	-	14	1*	-	
II		-	1	-	-	14	-	-	-	14		Colloquy	

L=lectures; PA=practical activities; CI=clinical internship

\* mandatory complementary discipline, with additional credits allocated

**Pre-requisites:** -

### General objectives:

- Maintaining an optimal state of health by forming the habit of practicing physical exercise;
- It aims at assimilation, consolidation and improvement of knowledge and skills from several previously learned or newly learned sports disciplines.

### Specific objectives:

At the end of the class the students will know:

- to understand and apply skills to practice health-freedom exercises in leisure time;
- the regulations of some sports and to demonstrate a technical element from a sport branch practiced during the course.

### Practical activities:

1. Physical Education and sport:

- developing general strength, corrective physical activities and recuperation that requires low effort.

2. Individual and team sports (sections of ASUIH):

- basket, volley, football, society dance, aerobic, fitness, table tennis, martial arts, ski, tourism, chase, badminton

**References:**

1. Popovici Cornelia, Kiss Mihai, David Sergiu, Kollos Ciprian, Fotbal – caiet de lucrări practice 2020
2. Kiss Mihai, Kollos Ciprian, Popovici Cornelia, David Sergiu, Volei – Caiet de lucrari practice, 2019
3. Kollos C., Kiss M.L., Popovici C., David S., Baschet – Caiet de lucrări practice, 2017
4. Kiss Mihai Ludovic, Popovici Cornelia - Dans de societate – caiet de lucrări practice, 2017
5. M. Kiss, Caiet de lucrări practice: Culturism - Fitness, 2013
6. C. Suci, Îndreptar de lucrări practico-metodice, 2013
7. Bocu T. Activitatea fizică în viața omului contemporan. Editura Casa Cărții de Știință 2007
8. Regulamentele ramurilor de sport practicate

**Evaluation**

- Colloquy 100%

## 2<sup>nd</sup> YEAR

### TOPOGRAPHIC AND SECTIONAL APPLIED ANATOMY

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Clinical, topographic and sectional anatomy</b>
<b>Course coordinator</b>	<b>Assoc. Prof. Dr. Bartoş Dana, MD, PhD</b> <b>Lecturer Dr. Carmen Micu, MD, PhD</b>
<b>Department</b>	<b>Morphological Sciences</b>
<b>Discipline</b>	<b>Anatomy and Embryology</b>
<b>Course code</b>	<b>MED 2 1 01 EN</b>

Semester	Course type	Lectures			Practical activities			Individual studies	TOTAL	Credits	Evaluation
		hours / week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	4	-	28	56	-	66	150	6	Written + Oral exam

L=lectures; PA=practical activities; CI=clinical internship

#### Pre-requisites: -

#### General objectives:

- Describe the gross anatomy of the Central Nervous System.
- Describe the gross anatomy of the Endocrine System.
- Describe the three-dimensional interrelationships of organs & blood & nerve supply.
- Provide anatomical basis for cross sectional and 3D digital imaging.
- Knowledge of topographic and sectional anatomical data with medical, surgical and imagistic relevance.

#### Specific objectives:

- Identify and describe the major components of the sense organs (eye, ear, nose) and describe them.
- Describe the vascularization and innervation of the structures of the sense organs (eye, ear, nose).
- Identify and describe the major components of the Central Nervous System.
- Describe the vascularization of the brain.
- Describe the meninges.
- Describe the ascending and descending pathways.

- Recognize structures in cross-sections.
- Describe and identify specific topographic areas.

**Course content:**

1. Generalities of the anatomy and the development of the central nervous system.
2. Spinal and cerebral meninges. Subarachnoid cisterns. Cerebrospinal fluid. Spinal cord: external configuration, relationships, vascularization. Brain vascularization.
3. Spinal cord. Microscopic structure. Spinal nerve and ganglion. The gray, white and reticulated substance.
4. The brainstem I.
5. The brainstem II.
6. Cerebellum. Diencephalon I (thalamus, metathalamus, epithalamus).
7. Diencephalon II (basal nuclei, subthalamic region, hypothalamus).
8. Telencephalon I.
9. Telencephalon II.
10. Cerebral ventricles.
11. Synthesis of the main pathways.
12. Eyeball and orbit. The optical pathway.
13. External, medium, internal ear. The acoustic and vestibular pathway.
14. Sectional Anatomy of the Central Nervous System. Drawings with sections at different levels of CNS.

**Practical activities:**

1. Central nervous system
2. Sense organs
3. Topographic anatomy

**Bibliography:**

1. Snell's Clinical Neuroanatomy. 8th edition 2019. ISBN-10: 0781794277, ISBN-13: 9780781794275
2. Gray's Anatomy. The Anatomical Basis of Clinical Practice. 41<sup>st</sup> Edition 2016. ISBN: 978-0-7020-5230-9
3. Color Atlas and Textbook of Human Anatomy. Nervous System and Sensory Organs (Volume 7<sup>th</sup> Edition 2015. Print ISBN: 9783135335070, E-Book ISBN: 9783132019577

**Evaluation - standardized exam:**

- Written exam 50%
- Practical exam 40%
- Verification throughout the semester 10%

## METABOLIC BIOCHEMISTRY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Metabolic Biochemistry  
**Course coordinator:** Prof. dr. Crăciun Alexandra, MD, PhD  
**Department:** Molecular Sciences  
**Discipline:** Medical Biochemistry  
**Course code:** MED2102EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	C	PA	CI				
I	Compulsory	3	3	-	42	42	-	91	175	7	Written+ practical exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Fundamentals of descriptive biochemistry

### General objectives:

- Learning and understanding of some biological mechanisms of high complexity and difficulty
- Functional exploration of body's systems
- Development of an observation sense and critical thinking, that are essential for the future's medical profession

### Specific goals:

- Acquiring of medical terms, of the necessary knowledge for integration of the functions from the molecular to general level, from the tissue to the organ, to understand the functionality of different organs, systems, and the interactions amongst them
- Training to properly use of the devices and laboratory materials, including the computerized methods, to investigate some physiological mechanisms and some physiological constants and parameters
- Acquiring of the capacity to synthesize the studied notions, and to search for the information in the reference's material
- Training to interpret the data found in the information/reference's sources

### Course content:

1. Introduction to metabolism

- 1.1. Definition
- 1.2. Anabolism and catabolism
- 1.3. Energy and metabolism
- 1.4. Regulation of metabolism
- 1.5. Central metabolism vs particular metabolism
- 2.1. Carbohydrates: roles, classification, structure
- 2.2. Glycolysis
  - 2.2.1. Glycolytic pathway
  - 2.2.2. Regulation of glycolysis
  - 2.2.2. Alternate fates of pyruvate
  - 2.2.3. Lactic acid cycle
- 2.3. Gluconeogenesis
- 2.4. Oxydative decarboxylation of pyruvate
- 2.5. Citric acid cycle
- 2.6. Pentose phosphate pathway
- 2.7. Glucuronic acid pathway
- 2.8. Glycogen metabolism
- 2.9. Fructose metabolism
- 2.10. Galactose metabolism
- 2.11. Glycosaminoglycans
3. Lipid's metabolism
  - 3.1. Digestion, absorbtion and transport of lipids
  - 3.2. Classification and structure of lipids
  - 3.3. Oxydation of fatty acids
  - 3.4. Synthesis of fatty acids
  - 3.5. Synthesis and degradation of triglycerides
  - 3.6. Synthesis and degradation of complex lipids. Lipid storage diseases.
  - 3.7. Metabolism and importance of ketone bodies
  - 3.8. Cholesterol – importance, synthesis and regulation
  - 3.9. Synthesis and importance of bile acids
  - 3.10. Steroid hormones
  - 3.11. Eicosanoids
4. Aminoacid metabolism
  - 4.1. General transformation of the amino acids
  - 4.2. Metabolism of ammonia
  - 4.3. Urea cycle
  - 4.4. Pathways of amino acids degradation
  - 4.5. Metabolism of phenylalanine and tyrosine
  - 4.6. Metabolism of creatine and creatinine
  - 4.7. Metabolism of heme
5. Metabolism of purines and pyrimidines
  - 5.1. Synthesis and catabolism of purines

5.2. Synthesis and catabolism of pyrimidines. Analogs of pyrimidines used in therapy.

**Practical activities:**

1. Collection and conservation of biological samples. Analysis of biological fluids
2. Serum glucose dosing. Oral Glucose Tolerance Test (OGTT).
3. Determination of urea in serum
4. Determination of uric acid
5. Determination of creatinine in serum
6. Bilirubin formation and metabolism. Determination of bilirubin
7. Classification and determination of total serum lipids. Serum lipid electrophoresis
8. Determination of cholesterol, triglycerides and serum phospholipids
9. Dysproteinemia tests. Determination of total serum proteins
10. Determination of enzymatic activity of transaminases, phosphatases, GGT, alpha-amylase
11. Biochemical analysis of urine. Complete urinary examination.
12. Pathological urinary components
13. Identification of urinary sediment components

**References:**

1. Pamela Champe: Biochemistry. Lippincott's Illustrated Reviews Series, Fourth (4th) Edition, 2009.
2. Tiberiu Nistor. Basics in metabolic biochemistry. Casa Cărții de Știință, 2nd edition, 2016
3. Tiberiu Nistor. Metabolic Biochemistry in questions, Casa Cărții de Știință, 2012.
4. Tiberiu Nistor. Biochemistry. Practical Labs in Medicine, Casa Cărții de Știință, 2010

**Evaluation - standardized exam**

- Theoretical exam 75%
- Practical exam 25%

## HISTOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Histology  
**Course coordinator:** Professor Maria Crisan, MD, PhD  
 Assoc. Prof. Adina Bianca Bocşa, MD, PhD  
 Lecturer Anne Marie Constantin, MD, PhD  
  
**Department:** Morphological Sciences  
**Discipline:** Histology  
**Course code:** MED 2 12 03 EN

Semester	Courses Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	2	-	28	28	-	44	100	4	Written+ practical exam
II	Compulsory	2	2	-	28	28	-	44	100	4	Written+ practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

Students will be able to use their theoretical knowledge in Histology in a clinical context, in order to acquire a proper integrated medical reasoning.

### Specific objective:

Students will be able to:

- Use a light microscope.
- Analyze and interpret a histological section under the light microscope
- Identify and differentiate the histological staining procedures.
- Render accurate histological diagnoses for the human tissues and organs.
- Render accurate differential diagnoses for the human tissues and organs based on histological diagnoses.
- Integrate the histological information into the fundamental and clinical subjects.

## Course content:

### 1<sup>ST</sup> SEMESTER (Second year)

**1. Introduction.** General considerations: types of tissues, classification, histogenesis. **Epithelial tissues:** Origin, Functions, Characteristics. Classification. **Surface (covering) Epithelia:** Simple and stratified epithelia; particular epithelia. Structure: LM and EM. Polarity and cell surface specializations. Basement membrane

**2. Glandular Epithelia.** Origin, Structure, Classification; general structure of exocrine and endocrine glands (characteristics, classification). Clinical correlations.

**Connective tissues.** Origin, Function and Structure. **Cellular components** (fixed cells, transient connective tissue cells). Clinical correlations

**3. Connective Tissues: Fibers. Ground substance.** Structure: LM and EM. **Classification** of the connective tissues. Types of connective tissues: Embryonic connective tissues. Connective tissues proper. Clinical correlations.

**4. Specialized Connective Tissues: Cartilage:** Origin, Structure. Classification of Cartilage: Hyaline cartilage: cartilaginous cells, ground substance and fibers, Perichondrium, Nutrition, Changes of cartilage with age, Regeneration of cartilage, Cartilage growth. Elastic cartilage. Fibrocartilage. The intervertebral disk. Clinical Correlations.

**5. Specialized Connective Tissues: Bone:** Origin, Function, Structure: Bone matrix, Cells of bone. Classification of bone: compact bone, spongy Bone. Microscopic structure of bone. Histogenesis of Bone: Intramembranous bone formation, Endochondral bone formation, Bone growth. Clinical correlations.

**6 Muscle:** Origin, function and structure. **Skeletal muscle:** histological structure, histological characteristics of the skeletal muscle. **Cardiac muscle:** histological structure. **Smooth muscle:** histological structure LM nad EM. Clinical correlations.

**7 Nervous tissue.** General considerations. Neurons, Neuroglial cells, Classification, Histological structure, Histophysiology. **Peripheral nervous system:** peripheral nerve as an organ. Clinical correlations

**8 Cardiovascular system.** General structure of blood vessels. Classification, Histological structure, **rteries. Capillaries. Veins. Lymphatic vessels.** Histophysiology. Clinical correlations.

**9. Immune system I:** General considerations. Red blood cells. White blood cells: Neutrophils, Eosinophils, Basophils, Monocytes, Platelets and megacariocytes. **Bone marrow.** Clinical correlations

**10 Immune system II:** Hemopoiesis: Erythropoiesis, Granulocitopoiesis. Monocytopenesis, Platelet formation. Clinical correlations.

**11 Immune system III: Lymphatic tissue.** General considerations. Lymphocytes Lymphopoiesis Lymphoid organs: **Thymus** (Histological structure and Function, Vascularization). Clinical correlations

**12 Immune system IV:** Lymphoid organs: **Lymph nodes.** Histological structure and functions, Vascularization, **Spleen** Histological structure and function. Vascular supply of the spleen. Clinical correlations.

### **13. Revision**

**14 Nervous System** **Peripheral nervous system:** spinal and vegetative ganglia. **Central nervous system:** spinal cord, cerebral cortex, cerebellar cortex. Clinical correlations.

## **2<sup>ND</sup> SEMESTER (Second year)**

**1 Digestive System.** Oral cavity: histological structure of the walls of the oral cavity and the oral mucosa, histological structure of the lips and tongue. The taste bud: histological structure and functions. Overview of the teeth. Salivary glands: histological structure and histophysiology. Clinical Correlations.

**2 Digestive System.** General structure of the esophago-gastro-intestinal tract. Esophagus and stomach: histological structure and functions. Clinical correlations

**3. Digestive System:** Small intestine. Large intestine. Appendix. Rectum and anal canal - histological structure, functions. Clinical correlations

**4. Digestive System:** Pancreas: histological structure and histophysiology. Liver: the hepatic lobule, the hepatocyte: histological structure and histophysiology. Clinical correlations

**5. Respiratory System:** The intra-pulmonary and extra-pulmonary airways histological structure. Olfactory mucosa histological structure and functions. Trachea histological structure. The lungs: histological structure and histophysiology. The air-blood barrier. Clinical correlations

**6. Urinary System:** Kidney histogenesis, overview, histological structure and histophysiology. vascularization. The urinary tract: the ureter, urinary bladder, urethra - histological structure and histophysiology. Clinical correlations

**7. Endocrine System:** Overview, cytology of the endocrine cells that secrete polypeptidic hormones and steroids. The diffuse Neuroendocrine System. The pituitary gland-histological structure and histophysiology. Pineal gland-histological structure and histophysiology. Clinical correlations

**8. Endocrine System:** The thyroid gland - histological structure and histophysiology. The parathyroid glands - histological structure and histophysiology. The adrenal gland - histological structure and histophysiology. Clinical correlations

**9. Male Reproductive System:** Testis histological structure and histophysiology. The testis-blood barrier. Genital tract histological structure and histophysiology. Accessory genital glands: the seminal vesicles, the prostate gland, the bulbourethral glands histological structure and histophysiology. Clinical correlations

**10. Female Reproductive System:** Ovaries: the ovarian follicles and the corpus luteum histological structure and histophysiology. Cyclic morphological

changes in ovary endocrine correlations between the ovary and the pituitary gland. Oviducts histological structure and histophysiology. Uterus histological structure and histophysiology; cyclic morphological changes in endometrium. Cervix, Vagina. Clinical correlations

**11. Female Reproductive System:** The structure of the uterus during pregnancy histological structure and histophysiology. Fertilization and implantation. Placenta morphogenesis, histological structure and histophysiology. Mammary glands resting and lactating histological structure and histophysiology. Clinical correlations

**12. Sense organs. Skin.** Epidermis, Dermis, Hypodermis histological structure and histophysiology. Skin appendages: Sweat glands, Sebaceous gland, Hair, Nail histological structure and histophysiology. Skin vascularization, Skin innervations. Clinical correlations

**13. Sense organs.** Eye histological structure and histophysiology; Transparent Media of the Eyeball. Cornea; Retina histological structure and histophysiology; Optic nerve. Accessory organs of the Eyeball: the eyelid and the lachrymal gland. The Inner Ear and the Corti's organ histological structure and histophysiology. Clinical correlations

**14. Revision lecture.**

**Practical activities:**

**1<sup>ST</sup> SEMESTER**

**1. Histological section.** Steps in Tissue Preparations; fixation, dehydration and clearing, embedding, sectioning, mounting and staining; Interpretation of microscopic sections; Advanced visualization procedures: histochemistry, immunocytochemistry, immunofluorescence; Common histological stains; Special histological stains.

**2. Epithelial Tissues I: *Surface epithelia*:** Simple squamous epithelium; Simple columnar epithelium; stratified squamous epithelium; pseudostratified columnar epithelium; transitional epithelium. HE stain, special staining methods.

**3. Epithelial Tissues II: *Glandular epithelia*:** Exocrine glands simple: tubular gland, simple alveolar gland, acini (serous, mucous, mixt) Endocrine glands: follicle type (thyroid); cord type (adrenal gland).

**4. Connective tissues I:** Embryonic connective tissue: Mucous tissue. Loose Connective tissue. Dense Connective tissue; regular and irregular type; tendon, elastic tissue.

**5. Connective tissues II:** Reticular tissue. Adipose tissue: white and brown: HE stain, special staining methods.

**6. Connective tissues III:** Cartilage: Hyaline cartilage. Elastic cartilage. Fibrous cartilage. HE stain. special staining methods

7. **Connective tissues IV:** Bone. Decalcified Compact bone. Decalcified Spongy bone. Compact ground bone. Endochondral bone formation. HE stain, special staining methods.
8. **Muscle tissue:** Skeletal muscle. Cardiac muscle structure. Muscle as an organ. HE stain, special staining methods.
9. **Nervous tissue:** Neurofibrils: silver impregnation, Periferal nerve fibers: osmic acid. Nerve as an organ
10. **Cardiovascular System:** Smooth muscle HE stain. Elastic arteries (Aorta). Muscular arteries. Veins. Capillaries. Lymphatic vessels. Vein-artery and nerve complex. HE stain and special staining methods.
11. **Revision.**
12. **Immune system I:** Tymus. Bone marrow. HE stain. **Revision**
13. **Immune system II:** Lymph node. Spleen. HE stain. **Revision.**

## 2<sup>ND</sup> SEMESTER

1. **Central Nervous System:** the spinal cord, the cerebellum, the brain. **The peripheral Nervous System:** the spinal and the autonomic ganglion HE stain and special stainings.
2. **Digestive system:** Lips. Tongue. Taste buds. HE stain and special stains.
3. **Digestive system.** Esophagus. Stomach- cross and longitudinal sections. Salivary glands. HE stain and special stains.
- 4 **Digestive system:** Small intestine: duodenum, jejunum. Colon. Appendix. Histological sections. HE stain and special staining. Differential diagnosis between the segments of the gastro-intestinal tract.
5. **Digestive system :** Pancreas. Liver. Gall bladder – HE stain and special stains
6. **Respiratory System:** Trachea. Epiglottis. Lungs. Bronchial tree. Differential diagnosis bronchus-bronchiole. Histological sections. HE stain and special stains.
7. **Urinary System:** Kidney. Ureter. Urinary bladder. Histological sections. HE stain and special stains.
8. **Endocrine system:** Pituitary gland. Pineal gland. Histological sections. HE stain and special stains. **Slide review.**
9. **Endocrine system:** Thyroid. Parathyroid glands. Adrenal glands. Histological sections. HE stain and special stains.
10. **Male reproductive system:** Testes. Epididymis. Ductus deferens. Prostate. Histological sections. HE stain and special stains. **Slide review.**
11. **Female Reproductive System:** Ovary. Uterus. Oviducts. Histological sections. HE stain; trichrome stain.
12. **Female Reproductive System:** Placenta at 3 months. Placenta at term. Resting mammary gland. Lactating mammary gland. HE stain and special stains.
13. **Sense organs;** Skin. Skin appendages (sebaceous gland, hair, hair follicle, sweat gland). Cornea. Retina. HE stain and special stains. **Slide review.**

**Mandatory bibliography:**

1. *General Histology: Tissues*. Maria Crisan, Carmen Mihaela Mihu, Carmen Melincovici, Bianca Bosca, Anne Marie Constantin, Andrei Coneac, Ioana Moldovan. Editura Medicala Universitara "Iuliu Hațieganu", Cluj-Napoca, 2013 ISBN 978-973-693-554-1
2. *General Histology: Organs*. Maria Crisan, Carmen Mihaela Mihu, Carmen Melincovici, Bianca Bosca, Anne Marie Constantin, Andrei Coneac, Ioana Moldovan, Hana Decean. Editura Medicala Universitara "Iuliu Hațieganu", Cluj-Napoca, 2015
3. *General Histology. Evaluation exercises*. Editors: Constantin Anne-Marie, Boșca Adina Bianca. Authors: Constantin Anne-Marie, Boșca Adina Bianca, Mihu Carmen, Crișan Maria, Șuşman Sergiu, Șovrea Alina, Mărginean Mariana, Melincovici Carmen, Jianu Mihaela, Moldovan Ioana, Coneac Andrei. Contributors: Lavinia Mocan Rada Suflețel Editura Medicală Universitară "Iuliu Hațieganu" Cluj-Napoca 2018 ISBN 978-973-693-867-2
4. *Special Histology. Evaluation exercises*. Editors: Boșca Adina Bianca, Constantin Anne-Marie. Authors: Boșca Adina Bianca, Constantin Anne-Marie, Mihu Carmen, Crișan Maria, Șuşman Sergiu, Șovrea Alina, Mărginean Mariana, Melincovici Carmen, Jianu Mihaela, Moldovan Ioana, Coneac Andrei. Contributors: Lavinia Mocan Rada Suflețel "Iuliu Hațieganu" Publishing House, Cluj-Napoca, 2018 ISBN 978-973-693-875-7
5. Ross MH, Kaye GJ, Pawlina W. *Histology a Text and Atlas*, 6th edition, Lipincott Williams & Wilkins. 2011.
6. Crisan M . *Histology; Laboratory textbook* Ed. Med. Univ. 'Iuliu Hatieganu" Cluj-Napoca, 2004
7. Ross MH, Kaye GJ, Pawlina W. *Histology a Text and Atlas*, 4th edition, Lipincott Williams & Wilkins. 2016.

**Optional bibliography:**

1. Kierszenbaum AL, Tres L. *Histology and Cell Biology: An Introduction to Pathology*, 4<sup>th</sup> edition, Elsevier Saunders, Philadelphia, 2016
2. Gartner LP, Hiatt JL. *BRS Cell Biology and Histology*, 7<sup>th</sup> edition, Wolters Kluwer, Baltimore, 2014

**Evaluation - standardized exam:**

- Written exam 70%
- Practical exam 30%

## PHYSIOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Physiology  
**Course coordinator:** Professor Dr Soimita Suci, MD, PhD  
 Associate prof dr Ioana Baldea, MD, PhD  
**Department:** Functional Sciences  
**Discipline:** Physiology  
**Course code:** MED21204EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		Hours/week			Hours/semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	3	3	-	42	42	-	73	157	6	Written+ practical exam
II	Compulsory	3	2	-	42	28	-	73	143	6	Written+ practical exam

L=Lectures; PA=practical activity; CI=clinical internship

**Pre-requisites:** -

### General objectives:

- Learning and understanding of some biological mechanisms of high complexity and difficulty
- Functional exploration of body's systems
- Development of an observation sense and critical thinking, that are essential for the future's medical profession

### Specific objectives:

- Acquiring of medical terms, of the necessary knowledge for integration of the functions from the molecular to general level, from the tissue to the organ, to understand the functionality of different organs, systems and the interactions among them
- Training for the devices and laboratory materials utilization, including the computerized methods, to investigate some physiological mechanisms and some physiological constant parameters
- Practicing the capacity to synthesize the studied notions, and the references material accumulation
- Training to interpret the data found in the read sources.

**Course content:**

1. Introduction in blood physiology. Blood functions. Hematocrit. Blood volume.
2. Blood properties. Acid-basis mechanisms. Plasma. Proteins.
3. Red blood cells – structure, number, variations, properties, blood types. Erythropoiesis. Iron metabolism.
4. White blood cells- structure, number, variations, roles, properties of granulocytes.
5. Immune function. Innate immunity. Local and general signs of inflammation. Complement.
6. Acquired immunity. Platelets- structure, morphology, functions. Hemostasis. Primary hemostasis.
7. Coagulation and fibrinolysis.
8. Heart physiology. Cardiac muscle- structure, properties.
9. Cardiac cycle. Cardiac activity phenomena- acoustic, mechanic, volumetric. Electrocardiogram
10. Regulation of the cardiac function.
11. Cardiac output. Coronary circulation. Hemodynamics. Physiological properties of the vascular system.
12. Blood pressure- measurement, factors, regulation. Arterial pulse.
13. Microcirculation. Transcapillary exchanges mechanisms. Autoregulation of the microcirculation.
14. Venous circulation. Lymphatic circulation. Regional circulation areas: pulmonary, cerebral, renal, skin.
15. Kidney structure, functions. Renal clearance. Renal blood flow regulation.
16. Mechanisms of urine formation. Glomerular filtration. Tubular reabsorption.
17. Water tubular reabsorption mechanism, water excretion, the roles of ADH and aldosterone. Urine concentration and dilution mechanisms. Tubular secretion. Kidney roles in regulation of the acid-basis homeostasis. Micturition.
18. Endocrine system- introduction, classification, hormones biochemistry, receptors, mechanism of action. Regulation of hormone secretion.
19. Hypophysis physiology.
20. Thyroid physiology.
21. Suprarenal glands physiology. Endocrine pancreas.
22. Parathyroid glands. Regulation of the calcium-phosphate homeostasis.
23. Sexual glands physiology. Reproduction.
24. Nervous system- introduction. Somesthesia- tactile receptors, afferent pathways, thalamus, cortical somesthesia projection.

25. Pain- receptors, afferent pathways, classification, physiological significance of pain, thermal sensibility.
26. Somatic motor system: spinal, spinal shock, suprasegmental control of the reflex medullary activity.
27. Cerebellum: architecture and organization, cerebellum cortex, roles. Cerebral control of the motility, pyramidal and extrapyramidal motor systems.
28. Sleep physiology. Vestibular system. Basal ganglia.

**Practical activities:**

1. Dosage of the sodium bicarbonate from plasma. ASTRUP parameters. Determination of blood and plasma density.
2. The influence of the osmotic pressure on the erythrocyte volume. Determination of the globular resistance of the erythrocytes. Serum protein electrophoresis.
3. Erythrocyte sedimentation rate. Red blood cells counting. Reticulocytes counting.
4. Blood typing. Rh blood typing. Hemoglobin identification. Erythrocyte indices. Bleeding time. Coagulation time.
5. Leukocytes counting. Differentiation of the white blood cells.
6. Clinical cases, laboratory tests. Platelets counting.
7. Prothrombin time. Rumpel-Leede compression test. Blood recalcification time.
8. Electrocardiogram.
9. Measurement of the blood pressure.
10. Adjustment of the cardio-vascular system at physical effort. Reflexes which influence the activity of the heart. Vagal reflexes.
11. Ankle-brachial pressure index (ABPI).
12. Effort capacity in the healthy and sick man- cycle ergometer test. Laboratory tests.
13. Recapitulation. Training for the practical exam. Analysis bulletins.
14. Practical exam
15. Renal clearance.
16. Urinalysis.
17. Oral glucose tolerance test (OGTT)
18. Hypoglycemia. Hypocalcemic tetany. The effects of insulin and alloxan on blood glucose level in rat- computer simulation
19. Endocrine pregnancy diagnosis. The effects of thyroxin, propylthiouracil on basal metabolism in rat- computer simulation
20. Electroencephalogram

21. Electrooculogram. Visual exploration
22. Somesthesia
23. Osteotendinous and cutaneous reflexes.
24. Vestibular apparatus: Optokinetic nystagmus, spontaneous nystagmus.
25. Vestibular apparatus: general and segmental equilibrium, provoked maneuvers.
26. Hearing sense exploration.
27. Recapitulation. Training for the practical exam. Analysis bulletins.
28. Practical exam

**References:**

1. Guyton AC, Hall JE. Textbook of Medical Physiology, Elsevier, 2016
2. Ganong WF. Review of Medical Physiology, McGraw-Hill Education, 2016.
3. D R Mitrea, R Orasan, Elementary Human Physiology, Ed. Techno Medical 2009, ISBN: 978-606-8030-57-9
4. Merali Z, Woodfine JD(eds). Essential MedNotes 2016. 32<sup>nd</sup> ed. Toronto Notes for Medical Students, Inc, Toronto, 2016.
5. Barrett K.E., Barman Susan M., Boitano Scott, Brooks Heddwen L. Ganongs-Review of Medical Physiology, 23<sup>rd</sup> Edition, USA, 2010.
6. Boron WF, Boulpaep EL. Medical Physiology, Elsevier, 2017.
7. DR Mitrea, Human Physiology, Laboratory tests, 2006, ISBN (10) 973-7865-24-3, Ed Techno Media, 2006, Sibiu

**Evaluation - standardized exam:**

- Written exam                      70%
- Practical exam                      30%

## GENERAL MICROBIOLOGY. CLINICAL MICROBIOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study programme:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Microbiology</b>
<b>Course coordinator:</b>	<b>Lecturer Carmen Costache, MD, PhD</b>
<b>Department:</b>	<b>Molecular Sciences</b>
<b>Discipline:</b>	<b>Microbiology</b>
<b>Course code:</b>	<b>MED21205EN</b>

Semester	Courses Type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.								
		L	PA	CI	L	PA	CI						
I	Compulsory	2	2	-	28	28	-		47	103	4	Written+ practical exam	
II	Compulsory	3	2	-	42	28	-		68	140	4	Written+ practical exam	

L=Lectures; PA=practical activity; CI=clinical internship

### Pre-requisites: -

### General objectives:

- Acquiring the basics of general microbiology.
- Study of the microorganisms (bacteria, viruses, parasites, fungi).
- Knowledge and correct use of microbiology concepts related to contamination with infectious agents and their transmission to humans to initiate an infectious process.
- Properties of the different groups of microorganisms, relationship with humans and their environment.
- The importance of microorganisms as etiologic agents of various infectious clinical entities: respiratory tract infections, digestive infections, genitourinary tract infections, congenital infectious, skin and CNS infections (meningitis, encephalitis).
- Knowledge of the bacterial, viral, parasitic and fungal virulence factors to understand their role in human pathology

### Specific objectives:

At the end of the course the student will be able to:

- Use and understand how the specific microbiological language is used;

- Knows the etiology, pathogenesis and stages of laboratory diagnosis of bacterial, viral, parasitic, fungal infections.
- Apply these notions in the basic fields of Medicine: classical and molecular diagnosis of infectious diseases, medical research, epidemiology of infections.
- Knowledge of laboratory methods and techniques used to detect and identify microorganisms.
- Perform minimum laboratory techniques required for a general practitioner: sampling of pathological products, performing a Gram stained smear and preparing for a Ziehl-Neelsen smear, inoculation of the pathological product on culture media, interpreting bacterial growth on culture media, performing and reading an antibiogram, performing rapid immunochromatographic tests and interpreting them.

**Course content:**

**COURSE Sem. I**

**Bacteriology:**

1. The microorganisms world. Definition. History. Classification. Taxonomy. Microorganism's particularities. Differences between the eukaryotic and the prokaryotic cells. Medical important phylogenic groups.  
Bacterial morphology
  2. Shapes and sizes - bacteria morpho-tinctorial characters. Optic microscopy. The importance of bacteria identification
  3. Obligate structures: Nucleoid – genetic information. Cytoplasm – bacterial metabolism. The cytoplasm membrane – environmental bacteria exchanges. The bacterial cell wall (its bacterial functions both in the environment and in the human body).
  4. Facultative structures: Capsule, glycocalix (bacterial adhesion, antiphagocytic factors). Fimbria and pilli (bacteria primitive sexuality). Cilia (bacterial motility, chemo-taxis). Bacterial spores, their structure and biologic role (bacterial cell differentiation). Bacterial physiology - Bacterial metabolism
  5. Environmental chemical and physical factors' influence on bacterial growth and division.
  6. Bacterial multiplication - bacterial growth and division. The bacterial growth curve. Physiologic phases of the bacterial cell. Bacterial adaptation to stress.
- Bacterial genetics (Evolution and adaptation in the bacterial world)
7. Bacterial DNA metabolism: Replication. Recombination. Repair. Restriction and modification. Bacterial replicons. Chromosomal and extra chromosomal heredity (plasmids, bacteriophages).

8. Operons/regulons (metabolic, resistance, virulence). Structure genes, signal sequences. The mobile genetic elements: transposons, integrons, retrons.
9. Variability. Mutation. Updates in mutational evolution of bacteria resistance genes. The genetic material transfer between bacteria: donor – recipient. Transformation and transfection. Conjugation. Phages transduction and conversion. Spread of pathogenicity genes and antibiotic resistance in the bacterial world.

#### Bacterial pathogenicity

10. The Koch-Henle postulates; the “exogenous genome” diseases. Contamination, infection, disease. Pathogenicity and virulence. Multifactorial pathogenicity (strategies), stadial pathogenesis
11. Bacterial pathogenicity factors. Bacterial toxins – exotoxins and endotoxins.
12. Human body responds to infection. Bacterial mechanism to escape defence mechanisms.

#### Antibacterial chemotherapy

13. Generalities about antibiotic drugs. Definition, therapeutic triangle; pharmacodynamics (MIC, MBC). The bacteriostatic and the bactericidal effects. The spectrum of action. Antibiotic families, mechanisms of action:  $\beta$ -lactam drugs, Glycopeptides, Amino glycosides – aminocyclitols
14. Tetracyclins, the MLS group, Phenicol, Quinolones, Rifampycines, Nitroderivates, Sulphonamides, Diaminopirimidines, Polymixins. Bacterial resistance to antibiotics: natural and acquired resistance. Molecules, genes, resistance phenotype: the SIR concept. Multiple resistances, selection of hospital antibiotic multiple resistant strains.

### **COURSE Sem. II**

#### Medical bacteriology

1. Genus *Staphylococcus*: representatives, pathogenicity factors, infections produced
2. Genus *Streptococcus*; Genus *Enterococcus*: representatives, pathogenicity factors, infections produced
3. Genus *Corynebacterium*; Genus *Mycobacterium*: representatives, pathogenicity factors, infections produced
4. Genus *Clostridium*; Genus *Bacillus*: representatives, pathogenicity factors, infections produced
- Genus *Haemophilus* and *Neisseria*: representatives, pathogenicity factors, infections produced
5. Important Enterobacteriaceae in human pathology. Genus *Pseudomonas*, *Helicobacter pylori*
6. Genus *Vibrio*, Spirochets (*Treponema*, *Leptospira*, *Borrellia*): representatives, pathogenicity factors, infections produced

7. *Rickettsia*, *Chlamydia*, *Mycoplasma*: representatives, pathogenicity factors, infections produced

#### Virology

8. Viruses – definition. Classification – LHT system; main families. Viral multiplication. Viral persistence. Prions. Viral genetics. Pathogenesis of acute and persistent infections- latent, chronic and slow infections.

9. Antiviral chemotherapy. Interferons. Viral oncogenesis

10. *Orthomyxoviridae* family; *Paramyxoviridae* family: general properties, infections produced

11. *Picornaviridae* family, *Rhabdoviridae* family: general properties, infections produced *Herpetoviridae* family, *Adenoviridae* family: general properties, infections produced

12. *Hepadnaviridae* family and other viruses that produce hepatitis

13. *Retroviridae* family: infection with HIV virus.

14. Human microbioma

15. Introduction to parasitology. Definitions: parasitism, intermediate host, definitive host, biological cycle, vectors. The general characteristics of the parasites. Classification. Transmission / human contamination. The action of parasites on the human body. The body's reaction to parasite action. Diagnostic methods used in parasitology: microscopy, determination of parasitic antigens, antiparasitic antibodies, molecular methods, cultivation, inoculation in mice.

16. Nematodes: *Ascaris lumbricoides*, *Trichuris trichiura*, *Enterobius vermicularis*, *Trichinella spiralis*, *Ancylostoma duodenalis*, *Strongyloides stercoralis* general characteristics and epidemiology; morphology; human contamination; biological cycle and pathogenesis; produced infections (clinical aspects); etiological diagnosis; treatment; prophylaxis .

17. Flatworms: *Fasciola hepatica*, *Hymenolepis nana*, *Diphyllobotrium latum*, *Taenia saginata*, *Taenia solium*, *Echinococcus granulossus*, *Echinococcus multilocularis* general characteristics and epidemiology; morphology; human contamination; biological cycle and pathogenesis; produced infections (clinical aspects); etiological diagnosis; treatment; prophylaxis .

18. Intestinal protozoa: *Giardia intestinalis*, *Entamoeba histolytica*, *Cryptosporidium*, *Isospora belli* - general characteristics and epidemiology; morphology; human contamination; biological cycle and pathogenesis; produced infections (clinical aspects); etiological diagnosis; treatment; prophylaxis .

19. Other protozoan diseases: *Toxoplasma gondii*, *Plasmodium* general characteristics and epidemiology; morphology; human contamination; biological cycle and pathogenesis; produced infections (clinical aspects); etiological diagnosis; treatment; prophylaxis .

20. Mycology: general characteristics, morphology, classification; epidemiology of fungal infections. Pathogenesis of fungal infections.

Diagnostic methods in mycology Clinic aspects of fungal infections and antifungal therapy: *Candida, Cryptococcus, Pneumocystis jirovecii* .

21. Mycology: general characteristics, morphology. Clinic aspects of fungal infections and antifungal therapy: *Aspergillus, Mucormycosis, dermatophytes* .

### **Practical activities:**

#### **Semester 1**

1. Protection rules in the Microbiology Laboratory. Laboratory tour.
2. Asepsis, antisepsis. Sterilization and disinfection methods. Needed devices
3. Sample collection. Diagnostic scheme for infectious diseases
4. Microscopic mounts: wet mount, smears: techniques.
5. Identification of microorganisms in wet mounts, in simple stain, in the Gram stain.

The Gram staining principle. The importance of the microscopic mounts in the bacteria identification, based on the morpho-tinctorial bacteria properties.

6. Ziehl Nielsen stain: principle, working technique, microorganisms identification.

Special staining: for spores, for capsule (the Burri stain), the silver impregnation stain, the Giemsa stains.

7. Culture media: inoculation techniques, bacteria identification based on the culture properties
8. Serologic reactions. Application of the serological reactions in the diagnosis of the infectious disease (bacterial identification, bacterial antigens and specific antibodies detection).
9. Serologic reactions. The agglutination reaction, the precipitation reaction: principle, technique, interpretation.  
The immune-fluorescence reaction, the ELISA method: principle, technique, interpretation.
10. Bacterial genetics: molecular biology techniques (PCR)
11. Bacteria sensitivity testing to antibiotics: the dilutions method: principle, technique, antibiogram interpretation.
12. Bacteria sensitivity testing to antibiotics: the disk diffusion method; E-Test: principle, technique, antibiogram interpretation.
13. Laboratory diagnosis in virology: techniques, principles, interpretation.
14. Laboratory diagnosis in parasitology: techniques, interpretation.

#### **Semester 2**

1. Laboratory diagnosis in the infections produced by Gram positive cocci (*Staphylococcus, Streptococcus, Enterococcus* genus).
2. Laboratory diagnosis in the infections produced by the representatives of *Haemophilus, Neisseria, Bordetella, Brucella* genus
3. Laboratory diagnosis in the infections produced by representatives of *Bacillus* genus (antrax),

and *Clostridium* genus (tetanus, botulism, gas gangrene, *C. difficile* infection).

4. Laboratory diagnosis in infections produced by representatives of the genus *Corynebacterium*. Laboratory diagnosis in tuberculosis and other infections produced by the representatives of *Mycobacterium* genus.

5. Laboratory diagnosis in the infections produced by pathogenic Enterobacteria (salmonellosis, bacillary dysentery). Laboratory diagnosis in the infections produced by commensal Enterobacteriaceae (*E. coli* and other Enterobacteriaceae).

6. Laboratory diagnosis in the infections produced by the representatives of: *Pseudomonas*, *Vibrio*, *Helicobacter*, *Campylobacter* genus.

Laboratory diagnosis in the infections produced by the representatives of: *Treponema*, *Leptospira*, *Borrellia* genus

7. Laboratory diagnosis in the infections produced by the representatives of *Rickettsia*, *Chlamydia*, *Mycoplasma* genus

Evaluation of the students from bacteriology knowledge

8. Laboratory diagnosis in influenza, coronavirus infections

*Paramyxoviridae*, Picornaviridae, Rhabdoviridae, Adenoviridae, Herpetoviridae infections

9. Laboratory diagnosis in hepatitis.

10. Laboratory diagnosis in HIV infection

11. Laboratory diagnosis in the infections produced by Nematodes

12. Laboratory diagnosis in the infections produced by Flatworms

13. Laboratory diagnosis in the infections produced by Protozoans

14. Laboratory diagnosis in fungal infections: *Candida*,

Culturi: *Candida*, *Aspergillus*, Mucorales, dermatofiti

## References:

1. Carmen Costache, Lia Monica Junie, Ioana Colosi - Medical bacteriology and medical virology. Editura Medicală Universitară "Iuliu Hațieganu", Cluj Napoca ", ediția 3-a, Cluj Napoca, 2017 ISBN 978-973-693-760-6

2. Lia Monica Junie (Carmen Costache -Traducator) – Basic Bacteriology and Virology -"Iuliu Hațieganu" Medical Universitatea Publishing House, Cluj-Napoca 2011

3. Lecture notes (electronic)

4. Karen C. Carroll, Janet S. Butel, Stephen A. Morse - *Jawetz, Melnik Adelberg's Medical Microbiology* – 27th edition, McGraw-Hill Professional Ed., 2016 ISBN 978-0071824989

5. The Centers for Disease Control and Prevention (CDC), Atlanta, USA <http://www.cdc.gov/>

6. The European Centre for Disease Prevention and Control (ECDC) <http://www.ecdc.europa.eu/>

7. World Health Organisation <http://www.who.int/en/>

8. Carmen Anca Costache, Ioana Alina Colosi, Mădălina Bordea - Laboratory Works for Microbiology Editura Medicală Universitară "Iuliu Hațieganu", Cluj Napoca, 2019, 134 pg, ISBN 978-973-693-932-7

**Evaluation - standardized exam:**

- Written exam            70%
- Practical exam         30%

## MEDICAL GENETICS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Medical Genetics  
**Course coordinator:** Lecturer Rodica Elena Cornean, MD, PhD  
 Lecturer Cătană Andreea, MD, PhD  
 Lecturer Dronca Eleonora, MD, PhD  
**Department:** Molecular Sciences  
**Discipline:** Medical Genetics  
**Course Code** MED21206EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			ore / sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	1	2	-	14	28	-	33	75	3	-
II		2	2	-	28	28	-	44	100	4	Written + practical exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisit:** -

### General objectives:

Understanding the role of biological individuality:

1. the differences in response of each organism to the aggressions of the environment and thus the different vulnerability to disease;
2. the determinism of common disorders, through the interaction between the genotype (which determines a certain predisposition to the disease) and the aggressive factors in the environment;
3. variable phenotypes and different severity of the same disease in different patients;
4. the different response, in particular, to the same treatment applied to different patients suffering from the same disease.

### Specific objectives:

1. Understanding the principles of normal and pathological heredity and variability.
2. Understand the general molecular basis of human pathology.
3. Understanding the impact of genetics in medicine.

4. Understanding the structures, mechanisms and basic laws of storage, transmission and expression of hereditary information for the formation, development and functioning of the human body.
5. Understanding the role for the conceptual basis of medicine because it offers a new perspective to modern medicine, dominated by molecular cell biology, genetics and immunology.
6. Understanding that genetic diseases have become a major public health problem.
7. Understanding the relationship between heredity and disease, respectively the role of mutations in the production of disease or predisposition to disease.
8. Acquiring basic notions about the diagnosis and care of patients with genetic diseases as well as their families.
9. Acquiring basic notions of genetic counseling, prenatal diagnosis, neonatal screening or pre-symptomatic diagnosis.

**Course content:**

1. Introduction to Medical genetics.
2. The human genome.
3. Gene structure. Variability of the genetic information. Mutations
4. Storage and transmission of genetic information
5. Polygenic and multifactorial heredity
6. Epigenetics
7. Population genetics
8. Chromosome anomalies and associated pathology
9. Mitochondrial pathology
10. Developmental genetics
11. Teratogenesis. Teratogens
12. Normal and pathologic sexual development
13. Immunogenetics and Immunopathology
14. Oncogenetics
15. Nutrigenetics
16. Pharmacogenetics
17. Genomic medicine and application in clinical medicine. From research to translational medicine
18. Principles of prophylaxis of genetic disorders
19. Treatment of genetic disorders
20. Medical genomics. Applications in human pathologies
21. Bioethics in medical genetics

**Practical activities:**

1. Human chromosome morphology
2. The analysis of human chromosomes. (1) Prenatal cytogenetic diagnosis
3. The analysis of human chromosomes. (2) Postnatal cytogenetic diagnosis

4. Molecular Cytogenetics FISH technique
5. CGH array
6. Applications in practical cytogenetics
7. Seminar
8. Molecular analysis techniques (DNA extraction and PCR)
9. Molecular analysis techniques. PCR-RFLP, ARMS-PCR, RT-PCR
10. Molecular analysis techniques DNA sequencing. Sanger technique
11. NGS. Next generation sequencing techniques
12. Molecular genetics in Forensic medicine
13. Applications of molecular DNA analysis in practical medicine
14. Semina.
15. Autosomal chromosome abnormalities related pathologies (1)
16. Autosomal chromosome abnormalities related pathologies (2)
17. Structural chromosome abnormalities related disorders
18. Heterosomal chromosome disorders (1)
19. Heterosomal chromosome disorders (2)
20. Seminar
21. Autosomal dominant disorders (1)
22. Autosomal dominant disorders (2)
23. Autosomal recessive disorders (1)
24. Autosomal recessive disorders (2)
25. X linked dominant disorders
26. X linked recessive disorders
27. Oncogenetics
28. Seminar

**References:**

1. Coordinator - Ioan Victor Pop. *Study guide for laboratory practice, second year students, general medicine, U.M.F. Iuliu Hațieganu Cluj-Napoca, 2015*
2. Coordinator: Pop Ioan Victor, *Medical Genetics for Second years General medicine students, UMF Cluj, 2015.*
3. [www.orphanet.com](http://www.orphanet.com)
4. [www.omim.com](http://www.omim.com)
5. [www.pharmgkb.com](http://www.pharmgkb.com)
6. [www.ensembl.org](http://www.ensembl.org)

**Evaluation:**

- Written exam                    66,67%
- Practical exam                    33,33%

## MEDICAL RESEARCH METHODOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Medical Research Methodology  
**Course coordinator:** Assoc. Prof. Dr. Horațiu Colosi, MD, PhD  
 Lecturer Dan Istrate, MD, PhD  
**Department:** Medical Education  
**Discipline:** Medical Informatics and Biostatistics  
**Course code:** MED2207EN

Semester	Course Type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/semester								
		L	PA	CI	L	PA	CI						
II	Compulsory	1,5	1,5	-	21	21	-		40	82	3	Written+ practical exam	

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites:** -

### General objectives:

1. To develop skills for effective retrieval, use and critical evaluation of medical scientific literature.
2. To develop skills to choose proper research methods and types of clinical studies in medical research.
3. To develop skills to choose suitable methods for data analysis and to correctly interpret results from medical research.
4. Skills development and acquisition of knowledge about appropriate methods of presenting results of scientific research.
5. Skills development and acquisition of knowledge needed to practice evidence-based medicine.

### Specific objectives:

*The course provides students fundamental knowledge on:*

1. Searching, recording and analyzing medical literature
2. Domains of medical research and clinical study types
3. Methods of medical research
4. Analysis and interpretation of results of medical studies
5. Principles for writing and correct presentation of research results
6. Principles of evidence-based medicine (EBM)
7. Ethical principles in medical research

*Practical Activities* have as objective the application of knowledge regarding:

1. Retrieving and accessing relevant medical information
2. Formulating proper research questions, defining the aim and objectives of research. The selection and proper formulation of research hypotheses. The identification of target populations in medical studies. Understanding sampling methods. Defining appropriate research variables. Writing a research protocol correctly.
3. Understanding and choosing correct methods of data collection
4. Understanding and choosing correct statistical methods for data analysis
5. Using computer tools to assist medical research
6. Understanding and using the correct principles of medical writing and oral presentation of medical research results
7. Evaluating the validity of studies
8. Critical reading of medical scientific literature

**Course content:**

1. Introduction -
  - Variability in the living world
  - Types of variables
2. Basic methodology of medical research
  - Phases of a research
  - Data collection
  - Sample-sampling
  - Estimation and confidence intervals
  - The research protocol
3. Study validity and bias in medical studies
  - Selection bias
  - Measurement and information bias
  - Confounding
4. Clinical studies
  - Prognostic studies
5. Clinical studies
  - Survival analysis
6. Clinical studies
  - Diagnostic studies
7. Clinical studies
  - The assessment of a therapeutic attitude

8. Clinical studies
  - The description of a health phenomenon
  - Meta-analysis Therapeutic studies
9. Choosing a statistical method
  - Data types
  - Comparing two groups
  - Independent and paired samples
  - Relation between two variables
  - Statistical methods for multiple variables
10. Presenting data
  - Tables and graphics used to present categorical data
  - Tables and graphics used to present quantitative data
  - Graphics for two variables
  - Errors in presenting data
11. Medical writing and communication of research results
  - Objectives of scientific writing
  - Proper scientific language and style
  - Types of medical texts
  - Principles of medical writing of a research paper
  - Principles of oral communication of a research paper
  - The structure and content of a research paper
12. Evidence based medicine (EBM)
  - Basic concepts
  - Steps for practicing EBM
  - Acquiring evidences by clinicians
  - Hierarchy of evidence
  - Searching for evidence
  - Building pertinent clinical questions (the PICO format)
  - Evaluation of validity for different types of clinical studies
  - Evaluation of study relevance
13. Ethics of medical research
  - Ethical principles, Clinical ethics committees
  - Ethical rules regarding participation in research
  - Fraud in medical research
14. Modeling and simulation in medical research
  - Principles of modeling and simulation
  - Domains and examples of modeling and simulation in biomedical sciences.

**Practical activities:**

1. Labor protection. Introduction

Bibliographic study - citing references for scientific materials found through bibliographic documentation, according to Vancouver style

2. Bibliographic study - bibliographic documentation, bibliographic record
3. Highlighting some risk or prognostic factors 1. Case-control study: case study (study protocol, data analysis and description, interpretation and discussion of results)
4. Highlighting some risk factors or prognostics 2. Cohort study: case study (study protocol, data analysis and description, interpretation and discussion of results)
5. Evaluation of the existence, size and meaning of the influence of risk and prognostic factors: Correlations and regressions: case study (study protocol, data analysis and description, interpretation and discussion of results)
6. Survival assessment - Survival data analysis: case study (study protocol, data analysis and description, interpretation and discussion of results)
7. Evaluation of a diagnostic procedure: case study (study protocol, data analysis and description, interpretation and discussion of results)
8. Evaluation of a therapeutic attitude: case study (study protocol, data analysis and description, interpretation and discussion of results)
9. Identification of systematic errors in a study
10. Choosing the statistical method
11. Medical writing (oral communication of the results of the scientific research): practical work of scientific style design of the presentation of a research in the form of slides
12. Medical writing (written communication of the results of scientific research) case study (critical assessment of medical writing of an original article)
13. Evaluation of study validity. Interpreting the results of medical studies. Practice of Evidence Based Medicine (EBM).
14. Recapitulative research scenarios.

### References:

1. Lecture notes (available at URL: <http://www.info.umfcluj.ro/>)
2. Machin D, Campbell MJ. Design of studies for medical research. Chichester. West Sussex: John Wiley & Sons Ltd; 2005.
3. Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. Designing Clinical Research. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2013.
4. Oehlert GW. A first course in Design and Analysis of Experiments. W. H. Freeman; 2000.
5. Laake P, Benestad HB, Olsen BR. Research in medical and biological sciences. London: Elsevier; 2015.
6. Matthews JR, Matthews RW. Successful scientific writing. New York: Cambridge University Press; 2008.

7. Drugan T et al. Lucrări practice de metodologia cercetării științifice medicale - pentru studenții facultății de medicină (RO/EN/FR) [online] 2018-2020. Available from URL: <http://www.info.umfcluj.ro/>

**Evaluation:**

- Written exam 70%
- Practical exam 30%

## FUNDAMENTAL EPIDEMIOLOGY AND PRIMARY HEALTHCARE

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Primary Health Care  
**Course coordinator:** Assoc. Prof. Amanda Radulescu, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Epidemiology  
**Course code:** MED2208EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluate
		hours / week			hours / semester						
		L	PA	CI	C	LP	St				
II	Compulsory	1	1	-	14	7	-	32	60	2	Written exam

L = lectures; PA= practical activities; CI=clinical internships

**Pre-requisites:** -

### General objectives:

At the end of the course, students will have the skills to apply the epidemiological method in order to promote health and prevent disease.

### Specific objectives:

At the end of the course students will possess the skills required to:

- to explain the quantitative expression of health events and the cause- effect relationship, highly relevant for disease prevention and control;
- to integrate the importance of disease surveillance on the local, national and international levels;
- to identify the methods applied in primary prevention completed by secondary and tertiary prevention;
- to identify the differences between the clinical and epidemiological method;
- to integrate the opportunity of epidemiological investigation as an important epidemiological tool with scientific and practical contribution in disease prevention and control;
- to interpret the contribution of clinical epidemiology within the concept of evidence-based medicine;
- to identify the fundamentals in the epidemiology of infectious diseases;
- to understand the components and principles of Primary Health Care as a fundamental concept for health promotion all over the world.

**Course content:**

1. Introducing the concept of community oriented medicine, individual, population health and the characterization of health determinants. The objectives and components of population health and its professional basis.
2. The contribution of epidemiology to the knowledge of the impact and causes of health phenomena. The components of the epidemiological rationale with applicability in the study of health events within populations.
3. The objectives of epidemiology and the domains of practical applicability: surveillance, investigation, analysis and epidemiological evaluation.
4. The objectives of epidemiological surveillance as a fundamental component in health policy planning. Integration of the information provided by the epidemiological surveillance in prioritization of programmatic interventions for population health.
5. The steps of epidemiological investigation in response to medical and public alert. Outbreak, epidemic and pandemic – definitions and features. COVID-19 pandemic - epidemiology and mitigation.
6. Epidemiological analysis – principles and planning analytical studies. Chance an errors in epidemiological research and limiting their intervention.
7. Epidemiological evaluation - meta-analysis and the evaluation of public health programmes as a tool for better healthcare.
8. Characterization of exogenous and endogenous infectious agents in relation with different preventive and therapeutic interventions. The response to infections, the nonspecific protective barriers, innate and adaptive immune response.
9. Classification of the infectious diseases according to the modes of transmission in relation with disease prevention and control.
10. Causality models in the epidemiology of infectious and non-communicable diseases. The validity of epidemiological research and the correlation between the quality of evidence and the strength of recommendation in medical practice.
11. Clinical epidemiology in individual and community health care. Health events studied: normal / abnormal delimitation, the natural history of disease, diagnosis, prognosis and treatment.
12. The levels of prevention. Population and individualized strategy in primary prevention. Secondary prevention approaching the early detection of abnormalities and diseases. Tertiary prevention, the efficacy and effectiveness of therapeutic interventions.
13. Primary Health Care (PHC) – a fundamental concept in population health promotion and sustainment. Definition and integration of PHC in the primary care of all communities with the direct participation of their members.
14. The components and principles of PHC. Its history and the perspectives in XXI century, the Millenium Development Goals

**Practical activities:**

1. Definition and calculation of the most frequently used epidemiological frequency indicators - incidence, prevalence and mortality
2. Defining the gross and specific rates of morbidity and mortality
3. Basic principles and standardization methods for optimizing geographical and temporal comparisons
4. Descriptive observational epidemiological studies: principles, evaluation of advantages and disadvantages
5. Analytical observational epidemiological studies: principles, evaluation of advantages and disadvantages
6. Evaluation of the cause-effect association by performing case-control studies
7. Evaluation of the causal relation as a model of epidemiological research, by carrying out observational analytical studies
8. Interventional studies: types, principles, components, advantages and disadvantages
9. Principles of application of a screening program, ensuring the validity and accuracy of the test applied
10. Mass screening test for secondary prophylaxis
11. . Performing screening tests to detect potential health disorders or diseases and prediction of the condition of interest depending on the prevalence.
12. Defining screening strategies within different population groups, benefits and limits.
13. The role and types of epidemiological studies needed for description, analysis and screening of health phenomena
14. Translating the results of medical research into clinical practice as a tool of optimal, evidence-based clinical decision

**References:**

Epidemiology and Primary Health Care - electronic support of the courses for the use of the students in Medicine

**Available online:**

1. R Bonita, R Beaglehole, T Kjellström. Basic epidemiology. 2<sup>nd</sup> edition World Health Organization 2006.  
*whqlibdoc.who.int/publications/2006/9241547073\_eng.pdf.*
2. David L. Katz, Joann G. Elmore, Dorothea M.G. Wild, and Sean C. Lucan. Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health. 4th ed. 2014, <https://studentconsult.inkling.com/>
3. Gordis L. Epidemiology. 5th ed. 2014 <https://studentconsult.inkling.com/>
4. Centers for Disease Control and Prevention (CDC) - Principles of Epidemiology in Public Health Practice. Third Edition An Introduction to

Applied Epidemiology and Biostatistics. 2012.  
<https://www.cdc.gov/csels/dsepd/ss1978/SS1978.pdf>

### Other references

5. Katz DL, Elmore JG, Wild D, Lucan SC. *Jekel's epidemiology, biostatistics, preventive medicine and public health*. 2014. ISBN-10: 1455706582.
6. Friis RH, Sellers TA. *Epidemiology for public health practice*. 5th ed. 2014. ISBN 1449651585, 9781449651589.
7. Aschengrau A, Seage G. *Essentials of Epidemiology in Public Health*. 3<sup>rd</sup> Ed. Jones & Bartlett Learning. 2014. ISBN 9781284028911.
8. Fletcher RH, Fletcher SW, Fletcher GS. *Clinical epidemiology 2012* ISBN-10: 1451144474.
9. Haynes RB, Sackett DL, Guyatt GH, Tugwell P. *Clinical Epidemiology: How to Do Clinical Practice*. 3<sup>rd</sup> ed. 2005 Lippincott Williams & Wilkins (LWW). ISBN: 978-0-78-174524-6.
10. Merrill R. *Introduction to Epidemiology* 6<sup>th</sup> Ed. Jones & Bartlett Learning. 2013. ISBN 9781449665487.
11. Hebel JR, McCarter R. *Study guide to Epidemiology and Biostatistics* 7<sup>th</sup> Ed. Jones & Bartlett Learning. 2012. ISBN9781449604752.
12. Centrul Național de Supraveghere și Control al Bolilor Transmisibile (CNSCBT). <https://www.cnscbt.ro/>.
13. European Centre for Disease Control and Prevention (ECDC). Available from: <https://ecdc.europa.eu/en/surveillance-and-disease-data>.
14. ECDC – COVID-19 pandemic. <https://www.ecdc.europa.eu/en/covid-19-pandemic>.
15. WHO - Coronavirus disease (COVID-19) pandemic. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.

### Evaluation:

- Written exam                    60 %
- Practical exam                    40 %

## ROMANIAN LANGUAGE

**Study field:** Health  
**Study program:** Medicine  
**Course title:** Romanian language  
**Course coordinator:** Assist. prof. Anca Hassoun  
 Lecturer Nora Mărcean  
 Lecturer Anca Ursa  
 Assist. prof. Denisa Tout  
**Department:** Medical Education  
**Discipline:** Modern Languages  
**Course code:** MED 2 12 09 EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	-	2	-	-	28	-	22	50	2	Colloquy
II		2	-	-	28	-	22	50			

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** -

### General objectives:

Development of competences in general and medical Romanian

### Specific objectives:

At the end of the seminar, the students will be able to:

- acquire information efficiently, using written and audio materials specific to the A2+ level
- write various types of texts: emails, formal requests, CVs, letters of intention, according to their language level
- produce an oral discourse (monologue or dialogue) in both formal and informal contexts, specific to the A2+ level

### Practical activity:

1. Welcome back! Revision. Basic vocabulary: clothes, weather, means of transport, holidays.
2. 'How I spent my summer vacation. What I learned during the summer internship program.' Past tense simple – verbs in the active voice.
3. My family – revision. Nouns in the genitive case. Describing a room/a person.

4. The human body – revision. The internal organs. Common medical terms.
5. The genitive case and the number in nouns.
6. The structure of a hospital. Basic notions about hospitals and medical specialists.
7. Verbs in the imperative. Specific medical terms. Presenting a recipe.
8. Health insurance. The Romanian health insurance system.
9. ‘The health insurance system in my country.’
10. The consultation. Doctor-patient dialogues.
11. Items in the hospital. Demonstrative pronouns and adjectives for closeness and distance.
12. The history taking (1) – structure.
13. Verbs in the imperative.
14. 1<sup>st</sup> semester assessment
15. The history taking (2).
16. The doctor-patient dialogue.
17. At the pharmacy. ‘What we buy from a pharmacy.’
18. Verbs in the conditional. The pharmacist – patient dialogue.
19. Children at the doctor’s. Vaccines and vaccination.
20. Demonstrative pronouns and adjectives for similarity and difference. Diminutives. Expressing an opinion.
21. Spring fatigue. Common symptoms.
22. Ordinal and adverbial numerals. The definite article – revision.
23. The common cold and the flu. Common illnesses.
24. Verbs accompanied by pronouns. Negative pronouns. Comparing two medical conditions.
25. Food poisoning. The human body systems. Specific medical terms – the digestive system.
26. Possessive adjectives, nouns in the genitive case.
27. Diarrhoea and constipation. Common illnesses. The adverb and the adjective – degrees of comparison. Taking a history – revision.
28. Summative assessment.

### References:

1. Bejan, D. Gramatica limbii române. Ediția a III-a, Cluj, Ed. Echinox, 2001.
2. Coiug, A, Andreica, A, Băgiag, A, Tomoiagă, A, Gogâță, C. Limba română. Comunicare de bază în mediul spitalicesc. Cluj-Napoca, Editura Medicală Universitară « Iuliu Hațieganu », 2018.
3. Common European Framework of Reference for Languages: Learning, teaching, assessment. Companion Volume with new descriptors. Provisional edition, September 2017, URL: <https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/168074a4e2>

4. Kohn, D., Puls. Limba română pentru străini. Iași, Ed. Polirom, 2009.
5. Gogâță, C, Tomoiagă, A, Coiug, A, Andreica, A, Băgiag, A, Ursa, A. Limba română. Elemente de limbaj medical. Nivel A2. Cluj-Napoca, Editura Medicală Universitară « Iuliu Hațieganu », 2018.
6. Gramatica de bază a limbii române (GBLR), București, Ed. Univers Enciclopedic, 2010.
7. Platon, E., Sonea, I., Vîlcu, D. Manual de limba română ca limbă străină (RLS). A1-A2. Cluj-Napoca, Casa Cărții de Știință, 2012.
8. Platon, E.; Sonea, I.; VasIU, L.; Vîlcu, D. Descrierea minimală a limbii române. A1, A2, B1, B2, Cluj-Napoca, Editura Casa Cărții de Știință, 2014.
9. Platon, E., Sonea, I., Vîlcu, D. Manual de limba română ca limbă străină (RLS). A1-A2. Cluj-Napoca, Casa Cărții de Știință, 2012.

**Evaluation:**

- Written Exam 34%
- Oral Exam 33%
- Verification throughout the semester 33%

## SPORTS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Physical Education and Sport  
**Course coordinator:** Associate professor Mihai Ludovic Kiss, PhD  
**Department:** Medical Education  
**Discipline:** Physical Education  
**Course code:** MED21210EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	-	1	-	-	14	-	-	14	-	-
II		-	1	-	-	14	-	-	14	1*	Verification

L=lectures; PA=practical activities; CI=clinical internship

\* mandatory complementary discipline, with additional credits allocated

**Pre-requisites:** -

### General objectives:

- Maintaining an optimal state of health by forming the habit of practicing physical exercise;
- It aims at assimilation, consolidation and improvement of knowledge and skills from several previously learned or newly learned sports disciplines.

### Specific objectives:

At the end of the class the students will know:

- to understand and apply skills to practice health-freedom exercises in leisure time;
- the regulations of some sports and to demonstrate a technical element from a sport branch practiced during the course.

### Practical activities:

1. Physical Education and sport:

- developing general strength, corrective physical activities and recuperation that requires low effort.

2. Individual and team sports (sections of ASUIH):

- basket, volley, football, society dance, aerobic, fitness, table tennis, martial arts, ski, tourism, chase, badminton

3. Medical Gymnastics

**References:**

1. Popovici Cornelia, Kiss Mihai, David Sergiu, Kollos Ciprian, Fotbal – caiet de lucrări practice 2020
2. Kiss Mihai, Kollos Ciprian, Popovici Cornelia, David Sergiu, Volei – Caiet de lucrari practice, 2019
3. Kollos C., Kiss M.L., Popovici C., David S., Baschet – Caiet de lucrări practice, 2017
4. Kiss Mihai Ludovic, Popovici Cornelia - Dans de societate – caiet de lucrări practice, 2017
5. M. Kiss, Caiet de lucrări practice: Culturism - Fitness, 2013
6. C. Suciu, Îndreptar de lucrări practico-metodice, 2013
7. Bocu T. Activitatea fizică în viața omului contemporan. Editura Casa Cărții de Știință 2007
8. Regulamentele ramurilor de sport practicate

**Evaluation :**

- Verification 100%

### 3<sup>rd</sup> YEAR

#### MEDICAL SEMIOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Semiology and Internal Medicine  
**Course coordinator:** Lecturer Cristina Hoțoleanu, MD, PhD  
**Department:** Internal Medicine  
**Discipline:** Medical Clinic II, Medical Clinic V  
**Course code:** MED 3 12 01 EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			Hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	3	-	5	42	-	70	38	150	5	Written and practical exam
II		3	-	6	42	-	84	24	150	7	

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Physiology

#### **General objectives:**

To understand the approach to the patient, consisting into anamnesis (history taking), physical exam and main complementary examinations required to identify a syndrome/disease.

#### **Specific objectives:**

To be able to apply the steps and principles of the anamnesis, to perform the correct physical exam of the patient, to correlate the information obtained from clinical data and main complementary examination.

#### **Course content:**

##### **1st semester**

1. Introduction. Definition of Semiology; objectives. History taking (Anamnesis): principles, steps
2. History taking: identifying data, age, sex, reason for admission, history of the current illness, past history (physiological and pathological data) family history, social history, review of the systems. Semiological description of the pain

3. General physical exam. Steps, tools (inspection, palpation, percussion, auscultation). Psychiatric assessment: disorder of mood, affectivity, thinking, sensibility and perception; syncope, coma
4. General physical exam. Posture, balance and gait, speech, motor and sensory nervous system
5. General physical exam. Facies in different diseases. Eye, ear, nose- main pathological aspects. Neck- thyroid ex.
6. General physical exam. Skin and mucosa: color changes. Primary and secondary lesions. Vascular lesions. Elasticity. Hydration state- turgor
7. General physical exam. Edema. Collateral circulation. Lymph nodes. Body temperature: fever/hyperthermia, hypothermia
8. Respiratory system. Relevant data from history taking and general physical exam for respiratory diseases. Main symptoms: dyspnea, cough, hemoptysis, chest pain. Physical exam of the lungs
9. Respiratory system. Consolidation sdr; pneumonia, bronchopneumonia, pulmonary infarction, lung abscess, lung fibrosis. Atelectasis: with/without obstruction
10. Respiratory system: tracheal sdr and broncho-obstructive sdr; asthma, chronic bronchitis
11. Respiratory system. Hyperinflation- pulmonary emphysema, COPD. Cavitory sdr.
12. Respiratory system. Pleural sdr, mediastinal sdr, resp failure
13. Renal system. Anamnesis; pain, micturition disorders and physical exam of the kidneys. Nephritic sdr. Nephrotic sdr. Glomerulonephritis.
14. Renal system. Tubulointerstitial sdr pyelonephritis; vascular sdr; renal failure (acute/chronic).

## **2nd semester**

1. The approach to the cardiac patient. History taking- relevant aspects for cardiovascular diseases. Cardiac physical exam: inspection, palpation, auscultation
2. Heart valve disease. Mitral stenosis and regurgitation; prolapse of the mitral valve. Aortic regurgitation and stenosis
3. Coronary artery disease. Definition, classification. Angina: stable and unstable forms. Acute coronary syndrome; acute myocardial infarction
4. Myocardial syndromes: Definition, classification. Dilatative, restrictive and hypertrophic cardiomyopathy; myocarditis. Pericardial syndrome: acute and chronic pericarditis; tamponade Endocardial syndrome- endocarditis
5. Arrhythmias and conduction disorders (Sp.Cl.Recuperare): 2 lectures
6. Heart failure. Classification. Peripheral artery disease PAD. Venous diseases (deep vein thrombosis, superficial thrombophlebitis, chronic venous insufficiency)

- \*pres. Hypertension, ECG, other complementary examinations in cardiovascular diseases (Holter ECG, stress tests, echocardiography, chest x-rays, coronarography, MRI, tilt test)
7. The approach to the patient with digestive pathology. History taking and changes at the general physical exam in digestive diseases. Mouth, pharynx and esophagus (semiological approach). Esophageal syndrome; GERD
  8. The abdomen. Abdominal topography; main symptoms; physical exam of the abdomen. Peptic ulcer disease.
  9. Bowel semiology. Appendicitis. Peritoneal syndrome.
  10. Liver and gall bladder semiology: History taking and physical exam in liver diseases. Portal encephalopathy. Percussion, palpation, auscultation of the liver. Gall bladder palpation; hydrops. Portal hypertension. Ascites. Jaundice and cholestasis. Hepatic tests
  11. Pancreas semiology: acute and chronic pancreatitis; diabetes mellitus  
\* pres Gastrointestinal tract hemorrhage. Complementary examinations in gastrointestinal diseases
  12. Red blood cells disorders: anemia, polyglobulia. Spleen pathology: splenomegaly, including hypersplenism
  13. White blood cells disorders: leucocytosis, leukopenia, leukemias, lymphoma. Main hemorrhagic syndromes.

**Practical activities:**

1. Generalities, welcome
2. Anamnesis in the salon
3. Constitutional type, somatic development
4. Dynamic disturbances, walking
5. Attitude
6. Eye changes
7. Semiology of the skull, ears, nose
8. Thyroid semiology
9. Semiology plywood
10. Nutrition status
11. Collateral circulation
12. The osteoarticular system
13. Respiratory system: inspection, palpation
14. Respiratory system: percussion, auscultation
15. Sputum examination
16. Pleural puncture, pleural fluid examination
17. Imaging explorations of the respiratory system
18. Functional pulmonary exploration
19. Respiratory system test
20. Urinary tract objective examination

21. Urine examination
22. Paraclinical urinary tract examinations
23. General objective examination in cardiac patients
24. Inspection, palpation, percussion of the heart
25. Semiology of blood pressure and pulse
26. Paraclinic heart (Rx) exploration
27. Objective examination of the arterial system
28. Objective examination of venous system
29. ECG presentation
30. Oral cavity
31. Objective examination of the abdomen
32. Examination of the ascites fluid
33. The coprological examination
34. Paraclinical investigations in digestive tract pathology
35. Functional exploration of the liver
36. Blood smear, medulograma.

#### **References:**

1. Lectures - handouts/electronic format.
2. Dumitrașcu DL, Fodor D, Albu A (eds). *Semiologie medicală vol I: Semiologie generală*. Ed. Universitară „Iuliu Hațieganu Cluj-Napoca, 2013, 225 pagini. ISBN 978-973-689-552-7
3. Dumitrașcu DL, Fodor D, Albu A (eds). *Semiologie medicală, vol II: Semiologie generală*. Ed. Universitară „Iuliu Hațieganu Cluj-Napoca, 2015. ISBN 978-973-693-552-7
4. Douglas G, Nicol F, Robertson C. *Macleod's clinical examination*. 13th Ed. 2013
5. Talley N, O'Connor S. *Clinical examination. A systematic guide to physical diagnosis*. 5th Ed. 2007;
6. Bates B. *Guide To Physical Examination And History Taking*. Lippincott Williams & Wilkins. 1999;

#### **Evaluation - standardized exam:**

- Written exam                    50%
- Practical exam                    40%
- Verification throughout the semester 10%

## SURGICAL SEMIOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Surgical semiology  
**Course coordinator:** Assoc. Prof. Barbu Traian Sorin, MD, PhD  
 Assoc. Prof. Ionescu Calin, MD, PhD  
**Department:** Surgery, Oncology  
**Discipline:** Surgery II, Oncological Surgery  
**Course code:** MED 3 1 02 EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	3	-	4	42	-	56	42	140	7	Written+ practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Anatomy, Pathology, Pathophysiology

### General objectives:

Application and practice of basic knowledge and basic practical skills in the most important situations in which surgical treatment is indicated: trauma, surgical infections, disorders of hydro-relectolytic and acid-base balance, coagulopathies, shock, abdominal wall disorders, peripheral vascular, of the endocrine glands, organ and tissue transplantation

### Specific objectives:

At the end of the course the student will be able to:

- to perform the anamnesis and the correct and complete objective examination of the patients with surgical pathology
- to formulate in the first stage the clinical diagnosis (clinical interpretation) or the most probable clinical diagnoses
- formulate an appropriate exploration plan to confirm / refute each diagnosis suspected
- to integrate the clinical data with those of the complementary explorations for the formulation of the positive diagnosis (positive diagnoses)
- to formulate possible differential diagnoses and to exclude / confirm with the help of clinical / laboratory elements these diagnoses
- to specify the evolutionary possibilities and the prognosis of the diagnosed disease

- formulate a treatment plan, specifying the principles and means of treatment, in accordance with current guidelines and adapted to the patient's particularities
- specify the criteria for monitoring the effectiveness of the treatment, as well as any causes of failure and / or complications
- correctly assess the conditions that reflect the patient's ability to work and, to the extent necessary, formulate a recovery plan

**Course content:**

1. Introduction to general surgery. Wound healing. Principles of wound treatment
2. Goiter/Thyroid nodule. Thyroid cancer. Diseases of the parathyroid. Diseases of adrenal glands. Scrotal and inguinal swellings. Hernias of the abdomen. Incision hernias.
3. Skin and soft tissue infections. Infections of the hand. Surgical site infections
4. Postoperative fever. SIRS and septic shock. Skin and soft tissues trauma.  
REVIEW AND EVALUATION 1
5. Soft tissues trauma/Polytrauma. Hemorrhage and hypovolemia. Transfusion.
6. Shock.
7. Local anesthesia. Perioperative analgesia. Postoperative complications.
8. Control of the hydro-electrolytic and acido-basic balance of the surgical patient. Nutrition.  
REVIEW AND EVALUATION 2
9. Acute peripheral ischemia. Chronic peripheral ischemia. Limb amputations.
10. Ulcers and necrosis of the foot. Pain and congestion of the foot. Diabetic foot.
11. Diseases of the veins and lymphatic vessels. Venous thrombosis.

**Practical activities:**

1. Surgery department. Surgical instruments.
2. Thyroid and parathyroid. Anamnesis and objective examination for the thyroid.
3. Clinical examination in hernias and abdominal eventrations. The minor patient. Informed consent.
4. Asepsis and antiseptis. Clinical examination of the surgical patient - emergency clinical examination.
5. Clinical examination in surgical infections. Principles of surgical treatment in hand infections.
6. Incision and drainage for soft tissue infections. Recording patient data.
7. Investigation plan. Paraclinical examinations. Inform the patient about therapeutic options.

8. Clinical examination in polytraumas. The patient with disturbances of consciousness.
9. Clinical examination of the limbs. Preoperative preparation in the surgical patient.
10. Malpractice. Anesthesia-surgical risk assessment. Bad news communication. Confidentiality
11. Surgical instruments. Laparoscopic instruments. Electrosurgery, radio frequency, cryosurgery.
12. FNAC TruCut / ClearCut Biopsy. Incisional and excisional biopsy.
13. Clinical examination / recapitulation. Clinical cases
14. Clinical examination / recapitulation. Clinical cases

**References:**

1. Peter F Lawrence *Essentials of General Surgery*. Ed., Wolters Kluwer Health/ Lippincott Williams and Wilkins, Fifth Edition, Baltimore, 2013;
2. Lorne H Blackbourne *Surgical Recall*. Ed., Wolters Kluwer Health/ Lippincott Williams and Wilkins, Sixth Edition, Baltimore, 2012;
3. Sabiston Textbook of Surgery: The Biological Basis of Modern Surgical Practice / Edition 20 Courtney M. Townsend Jr. JR. , MD, R. Daniel Beauchamp MD, B. Mark Evers MD;

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## PATHOPHYSIOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** General Pathophysiology  
**Course coordinator:** Prof. Alina Elena Pârvu, MD, PhD,  
 Prof. Adriana Elena Bulboacă, MD, PhD  
**Department:** Functional Sciences  
**Discipline:** Pathophysiology  
**Course code:** MED31203EN

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.								
		L	PA	CI	L	PA	CI						
I	Compulsory	2	2	-	28	28	-	44	100	4	Written + practical exam		
II		2	2-		28	28	-	44	100	4	Written + practical exam		

L = lectures; PA = practical activities; CI = clinical internship

**Preliminary conditions:** Physiology I and II

### General objectives:

- Understanding the basic pathophysiological mechanisms of the main diseases applied on clinical cases;
- Discovery of particular pathophysiological mechanisms of some diseases applied on clinical cases;
- Application of algorithms for exploring pathophysiological and pathogenetic mechanisms;

### Specific objectives:

At the end of the course students will be able to:

- To formulate a diagnosis of the etiopathogenetic complex
- To formulate a pathophysiological and pathogenetic diagnosis
- To make a list of differential pathophysiological diagnoses
- To request and analyze the tests necessary for the pathophysiological and pathogenetic diagnosis

### Course content:

1. Introduction, disease, cell pathophysiology.

2. Inflammatory response pathophysiology. Thermoregulation pathophysiology
3. Carbohydrate metabolism disorders pathophysiology
4. Lipid and protein metabolism disorders pathophysiology
5. Red blood cells disorders pathophysiology - anemias
6. Red blood cells disorders pathophysiology - polycytemias
7. Haemostatic disorders pathophysiology – bleeding syndromes
8. Haemostatic disorders pathophysiology – thrombotic syndromes
9. Pathophysiology of acid-base disorders
10. Respiratory diseases pathophysiology I
11. Respiratory diseases pathophysiology II
12. Pathophysiology of fluid and electrolyte disorders.
13. Pathophysiology of selected renal diseases I
14. Pathophysiology of selected renal diseases II
15. Pathophysiology of heart failure
16. Pathophysiology of ischemic heart disease
17. Pathophysiology of high blood pressure
18. Pathophysiology of the shock
19. Pathophysiology of esophageal and gastric diseases
20. Pathophysiology of selected intestinal diseases
21. Pathophysiology of selected liver diseases
22. Pathophysiology of selected pancreas, gallbladder and bile ducts diseases
23. Pathophysiology of selected vascular nervous system diseases
24. Pathophysiology of selected degenerative and immune nervous system diseases
25. Pathophysiology of pain
26. Pathophysiology of selected hypothalamic and pituitary diseases
27. Pathophysiology of selected thyroid and parathyroid diseases
28. Pathophysiology of selected adrenal and genital diseases

**Practical activities:**

1. Introduction.
2. The effect of physical and chemical etiological factors.
3. Inflammatory diseases diagnosis.
4. Carbohydrate metabolism disorders diagnosis
5. Lipid metabolism disorders diagnosis
6. Protein metabolism disorders diagnosis
7. Red blood cells disorders diagnosis
8. Haemostatic disorders diagnosis I
9. Haemostatic disorders diagnosis II

10. Acid-base disorders diagnosis algorithm
11. Respiratory disorders diagnosis
12. Fluid-electrolyte disorders diagnosis algorithm.
13. Renal disorders diagnosis algorithm I
14. Renal disorders diagnosis algorithm II
15. ECG
16. ECG
17. ECG
18. Ischemic heart disease and heart failure diagnosis algorithm
19. Blood pressure disorder diagnosis algorithm
20. Esogastrointestinal disorders diagnosis algorithm
21. Maldigestion, malabsorption disorders diagnosis algorithm
22. Liver disorders diagnosis algorithm
23. Pancreas, gallbladder and bile ducts disorders diagnosis algorithm
24. Nervous system disorders diagnosis algorithm I
25. Nervous system disorders diagnosis algorithm II
26. Endocrine disorders diagnosis algorithm II
27. Endocrine disorders diagnosis algorithm II
28. PBL

### References:

1. Pârnu Alina Elena - General Pathophysiology Ed. Med. Univ. "Iuliu Hațieganu" Cluj-Napoca, 2003
2. Pârnu Alina Elena - Systemic Pathophysiology Vol.I. Ed. Med. Univ. "Iuliu Hațieganu" Cluj-Napoca, 2004
3. Pârnu Alina Elena, Bulboacă Adriana, Bărcăan Adrian, Pathophysiology. Handouts For Medical Students, Volume 1, Ed Echinox, 2010.
4. Silbernagl Stefan, Lang Florian, Color Atlas Of Pathophysiology 3<sup>rd</sup> Ed., Thieme Publishing Group, 2016
5. Hammer Gary D., Mcphee Stephen J., Pathophysiology Of Disease: An Introduction To Clinical Medicine, 8<sup>th</sup> Ed. Mcgraw-Hill Education - Europe, 2018.
6. Bunn Howard Franklin, Aster Jon C., Pathophysiology Of Blood Disorders, Lange Medical Books, Mcgraw-Hill Medical, 2<sup>nd</sup> Ed., 2016.
7. Hoffbrand Victor, Moss Paul, Essential Haematology, Wiley-Blackwell; 8th Ed., 2019
8. Juzar Ali, Warren Summer And Michael Levitzky, Pulmonary Pathophysiology: A Clinical Approach, 8th Ed., Lange Medical Book, Mcgraw-Hill Medical, 2019.

9. West John B., Pulmonary Pathophysiology: The Essentials Lippincott Williams & Wilkins; 10<sup>th</sup> Ed., 2017
10. Rennke Helmut, Helmut G., Denker Bradley M., Renal Pathophysiology: The Essentials , 5<sup>th</sup> Ed., Williams & Wilkins, 2019
11. Leonard S. Lilly, Pathophysiology Of Heart Disease: An Introduction To Cardiovascular Medicine, Williams & Wilkins, 2020
12. Mark Feldman, Lawrence S. Friedman, Lawrence J. Brandt, Sleisenger And Fordtran's Gastrointestinal And Liver Disease- 2 Volume Set: Pathophysiology, Diagnosis, Management 11th Ed., 2020
13. Eric I. Felner, Guillermo E. Umpierrez, Endocrine Pathophysiology, Williams & Wilkins 2013
14. Tommie L Norris, Rupa Lalchandani, Porth's Pathophysiology: Concepts Of Altered Health States 10e , Wolters Kluwer, 2018
15. William Ellet, The Case Study Handbook, Revised Edition: A Student's Guide, Hbr Pres, 2018
16. Felipe Fregni, Ben M.W. Illigens, Critical Thinking In Clinical Research: Applied Theory And Practice Using Case Studies 1st Edition, 2018, Oxford University Press
17. Harold J. Bruyere, 100 Case Studies In Pathophysiology, Wolters Kluwer, Lippincott Wiliams& Wilkins, 2010
18. Yasmeen Agosti, Pamela Duke, Med Maps For Pathophysiology, Wolters Kluwer, Lippincott Wiliams& Wilkins, 2007
19. Maxine Papadakis, Stephen Mcphee, Michael Rabow Current Medical Diagnosis And Treatment, 59th Ed., Mcgraw Hill Lange, 2020

**Evaluation - Standardized Exam:**

Written exam	40%
Practical exam	30%
Verification throughout the semester	30%

## PATHOLOGICAL ANATOMY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Pathology: General Pathology / Systemic Pathology  
**Course coordinator:** Assoc. Prof. Doinița Crișan, MD, PhD  
 Assoc. Prof. Dan Gheban, MD, PhD  
**Department:** Morphological Sciences  
**Discipline:** Pathological Anatomy  
**Course code:** MED 3 12 04 EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	2	-	28	28	-	51	107	4	Theoretical + practical exam
II		3	3	-	42	42	-	72	156	5	Theoretical + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

- To acquire general notions of pathology - macroscopic and microscopic features of basic pathological processes (fluid derangements, metabolic disorders, inflammation and neoplasia) and to correlate them with data presented in other specialties, referring to the etiology, pathogenesis, diagnosis, evolution, and complications of the diseases.
- Based on the material studied in the first semester, students will acquire notions of pathological changes of the main diseases of organ systems and their integration in the context of the knowledge acquired in other specialties (pathophysiology, medical and surgical semiology, pharmacology, etc.).

### Specific objectives:

At the end of the semester, students must be able to:

- use specific terms of pathology
- recognize macroscopic lesions: on pictures, surgical specimens, autopsy cases
- recognize microscopic lesions: on pictures, at the microscope

- establish correlations between the clinical features and the pathologic modifications of the diseases
- interpret a histopathological report: to recognize a specific pathologic entity and to formulate the main differential diagnoses

**Course content:**

**1st semester**

1. FLUID & HEMODYNAMIC DISORDERS. Hyperemia. Hemorrhage. Ischemia.
2. FLUID & HEMODYNAMIC DISORDERS. Thrombosis. Embolism. Infarction.
3. FLUID & HEMODYNAMIC DISORDERS. Disseminated intravascular coagulation. Shock. Edema. Disorders of the lymphatic fluid.
4. DISORDERS OF METABOLISM. Adaptative processes: hypertrophy, hyperplasia, atrophy, metaplasia.
5. DISORDERS OF METABOLISM. Cellular injury and cell death: hydropic change, steatosis, cellular death – apoptosis, necrosis
6. DISORDERS OF METABOLISM. Pathology of the extracellular matrix: proteoglycans, elastic fibers, collagen, amyloid, hyaline. Intracellular accumulations: lipids, proteins, glycogen, mucopolysaccharides, pigments – melanin, hemosiderin.
7. DISORDERS OF METABOLISM. Intracellular accumulations: copper, bilirubin. Pathologic calcification. Lithiasis. Keratin disorders.
8. INFLAMMATION AND HEALING. Inflammation: general features. Acute inflammation: serous, fibrinous, purulent.
9. INFLAMMATION AND HEALING. Acute inflammation: hemorrhagic, necrotizing. Viral inflammation.
10. INFLAMMATION AND HEALING. Chronic inflammation: bacterial.
11. INFLAMMATION AND HEALING. Chronic inflammation: fungal, parasitic. Healing: regeneration, repair.
12. NEOPLASIA. Etiopathogenesis. Tumor biology. General features of benign and malignant tumors. Tumor invasion and metastasis. Benign epithelial tumors: papilloma, adenoma.
13. NEOPLASIA. Malignant epithelial tumors carcinoma. Benign and malignant tumors of the soft tissue.
14. NEOPLASIA. Benign and malignant tumors of the soft tissue. Benign and malignant melanocytic tumors.

**2nd semester**

1. PATHOLOGY OF THE RESPIRATORY TRACT. Upper airways: congenital anomalies, inflammations, lethal midfacial granuloma, tumor-like lesions, benign and malignant tumors. Lung: congenital anomalies, vascular diseases, acute respiratory distress syndrome, atelectasis, emphysema, chronic bronchitis, bronchiectasis, pulmonary infections, granulomatous lesions, pulmonary eosinophilia, hypersensitivity pneumonitis, bronchial asthma.

2. PATHOLOGY OF THE RESPIRATORY TRACT. Pneumoconiosis, pulmonary fibrosis. Tumors. Pleural effusions. Pleural tumors.
3. PATHOLOGY OF THE CARDIOVASCULAR SYSTEM. Heart: congenital anomalies, rheumatic fever, endocarditis (infective, noninfective), other valvulopathies, complications of artificial valves, myocarditis, ischemic heart disease, cardiosclerosis, cardiomyopathies, tumors. Pericardial effusions.
4. PATHOLOGY OF THE CARDIOVASCULAR SYSTEM. Blood vessels: congenital anomalies, vasculitis, atherosclerosis, aneurysms, varices.
5. PATHOLOGY OF THE DIGESTIVE SYSTEM. Esophagus: congenital anomalies, lesions associated with motor dysfunction, esophageal varices, esophagitis, benign tumors, malignant tumors. Stomach: congenital anomalies, gastritis (acute, chronic), erosions and ulcerations, peptic ulcer, benign tumors, malignant tumors. Small bowel: congenital anomalies, ischemic bowel disease, infectious enterocolitis, malabsorption syndromes, tumors. Inflammatory bowel disease (Crohn's disease, ulcerative colitis)
6. PATHOLOGY OF THE DIGESTIVE SYSTEM. Large bowel: congenital anomalies, megacolon, necrotizing enterocolitis, pseudomembranous colitis, polyps and polyposis syndromes, carcinomas, carcinoid, lymphomas of the gastrointestinal tract, gastrointestinal stromal tumors, ileus. Appendicitis. Liver: congenital anomalies, vascular diseases, hepatitis (acute, chronic), cirrhosis.
7. PATHOLOGY OF THE DIGESTIVE SYSTEM. Liver: tumor-like lesions, tumors (primary - benign, malignant; liver metastases). Gallbladder: congenital anomalies, cholecystitis, tumors. Pancreas: congenital anomalies, cystic fibrosis, pancreatitis (acute, chronic), benign and malignant tumors of the exocrine and endocrine pancreas, diabetes mellitus.
8. PATHOLOGY OF THE URINARY SYSTEM. *Kidney*: congenital anomalies, cystic diseases, genetic nephropathies, glomerulopathies, tubulopathies, interstitial nephropathies, vascular diseases, benign tumors, malignant tumors.
9. PATHOLOGY OF THE URINARY SYSTEM. *Urinary tract and urinary bladder*: congenital anomalies, cystitis, tumors of the urinary bladder. PATHOLOGY OF THE MALE GENITAL SYSTEM. Penis: congenital anomalies, traumatic and vascular disorders, inflammations, preneoplastic lesions, carcinoma. Testis and epididymis: congenital anomalies, orchitis and epididymitis, infertility, testicular tumors. Prostate: prostatitis, benign hyperplasia, carcinoma.
10. PATHOLOGY OF THE FEMALE GENITAL SYSTEM. Congenital anomalies, intersexuality. Vulva, vagina: inflammations, tumors. Uterine cervix: cervicitis, cervical polyp, tumors. Uterine body: adenomyosis, endometriosis, endometrial hyperplasia, tumors. Pelvic inflammatory disease. Ovarian tumors.
11. PATHOLOGY OF THE FEMALE GENITAL SYSTEM. Gestational trophoblastic disease. Breast: congenital anomalies, mastitis, fibrocystic change, tumors.
12. PATHOLOGY OF BONES AND JOINTS. Bone: congenital anomalies, developmental and acquired abnormalities in bone cells, matrix and structure,

osteonecrosis, osteomyelitis, tumor-like lesions, bone-forming tumors, cartilage-forming tumors. Joints: osteoarthritis, rheumatoid arthritis, gouty arthritis, infectious arthritis.

13. PATHOLOGY OF WHITE CELLS AND LYMPH NODES. Lymphadenitis, reactive proliferations, non-Hodgkin lymphomas, Hodgkin lymphoma, multiple myeloma/plasma cell myeloma, Waldenström macroglobulinemia, Langerhans cell histiocytosis.

14. PATHOLOGY OF THE ENDOCRINE SYSTEM. Thyroid: thyroiditis, goiters, tumors. Adrenal glands: pathology of the cortex and of the medulla, tumors. PATHOLOGY OF THE CENTRAL NERVOUS SYSTEM. Congenital anomalies, meningitis and encephalitis, primary tumors, brain metastases.

### **Practical activities:**

#### 1. Circulatory disorders

- Macroscopy, microscopy: Congestia. Acute stasis. Chronic stasis. Bleeding (external, internal, externalized). The effects of ischemia. Recent thrombosis. Old thrombosis. Embolia (forms of embolism, types of emboli). Recent heart attack. The old heart attack. White heart attack. Red heart attack. Disseminated intravascular coagulation. Shock. Edema (forms of edema, acute pulmonary edema). Disorders of lymphatic circulation

#### 2. Metabolism disorders

- Macroscopy, microscopy: Hypertrophy. Hyperplasia. Atrophy. Metaplasia. Hydropic degeneration. Fatty. Cell death: apoptosis, necrosis (necrosis types)  
- Macroscopy, microscopy: Myxoid degeneration. Elastopatii. Sclerosis / fibrosis. Amyloidosis. Hyalinosis. Tezaurismoze. Hipomelanoze. Hipermelanoze. Iron accumulations. Wilson's disease. Jaundice. Dystrophic qualification. Metastatic calcification. Lithiasis. Keratin dystrophies

#### 3. Inflammation and healing

- Macroscopy, microscopy: Acute inflammation: serous, fibrinous, purulent, hemorrhagic, necrotizing.  
- Macroscopy, microscopy: Chronic bacterial inflammation (tuberculous granuloma, syphilitic gum, rhinoscleroma, actinomycosis). Chronic fungal inflammation (candidiasis, aspergilloma). Chronic parasitic inflammation (toxoplasmosis). Viral inflammation. Healing: regeneration, repair

#### 4. Tumors

- Macroscopy, microscopy: General features of benign and malignant tumors. Benign epithelial tumors: adenoma, papilloma. Malignant epithelial tumors: squamous cell carcinoma, basal cell carcinoma, adenocarcinoma  
- Macroscopy, microscopy: Pseudotumoral mesenchymal lesions: keloid, hypertrophic scar, fibromatosis, nodular fasciitis. Benign mesenchymal tumors: lipoma, fibrous histiocytoma, leiomyoma, rhabdomyoma, hemangiomas, lymphangiomas, schwannomas, neurofibromas, neurofibromatosis. Malignant mesenchymal tumors: fibrosarcoma,

liposarcoma, dermatofibrosarcoma protuberans, rhabdomyosarcoma, leiomyosarcoma, malignant nerve sheath tumor, synovial sarcoma. Melanocyte needs. Melanoma

#### 5. Pathology of the respiratory system

- Macroscopy / Microscopy: Upper respiratory tract: malformations, nasal papilloma, vocal nodule, laryngeal papilloma, laryngeal carcinoma, Lung: malformations, diffuse alveolar injury and adult-type respiratory distress, alveolar collapse, pulmonary and pulmonary hyperphysema, bronchial pulmonary and hyperinfection, , bronchial asthma. Pulmonary infections: Lobar pneumonia, bronchopneumonia, interstitial pneumonia. Fibrous pneumonia. Anthracosis. Silicosis. Lung cancer: squamous cell carcinoma, small cell neuroendocrine carcinoma, adenocarcinoma. Pleural collections. Pleural mesothelioma

#### 6. Pathology of the cardiovascular system

- Macroscopy, microscopy: Cardiac malformations. The rheumatic node. Rheumatic carditis. Infectious endocarditis. Non-infectious endocarditis. Degenerative valves. Myocarditis. Myocardial ischemic lesions. Cardiomyopathies. Heart tumors: atrial myxoma. Pericardial collections. Vasculitis (Horton's disease, Takayasu's disease, obliterating thrombngitis, nodular polyarthritis, Wegener's granulomatosis, hypersensitivity vasculitis). Atherosclerosis. Complications of atherosclerosis. Aneurysms. Varicose veins

#### 7. Pathology of the digestive tract

- Macroscopy, microscopy: Esophageal malformations. Esophageal varices. Esophagitis. Barrett's esophagus. Esophageal cancer: squamous cell carcinoma, adenocarcinoma. Gastric malformations. Pyloric stenosis. Acute gastritis. Chronic gastritis. Chronic peptic ulcer. Gastric polyps. Gastric cancer. The fun Meckel. Infectious enterocolitis. Celiac disease. Congenital megacolon. Necrotizing enterocolitis. Pseudomembranous colitis. Inflammatory bowel disease (Crohn's disease, ulcerative colitis - RCH). Gastrointestinal polyps / polyps. Colon carcinoma. Carcinoid tumors. GIST. Gastrointestinal tract lymphomas. appendicitis

#### 8. Pathology of the digestive tract

- Macroscopy, microscopy: Liver: malformations, liver vascular diseases. Hepatitis (acute, chronic). Liver cirrhosis. Hepatic tumors and pseudotumor lesions. Liver cancer: hepatocellular carcinoma, cholangiocarcinoma. Liver metastases. Gallbladder: malformations, cholecystitis, carcinoma. Pancreas: malformations, cystic fibrosis, pancreatitis (acute, chronic), ductal pancreatic cancer. Endocrine pancreatic tumors. Diabetes

#### 9. Pathology of the urinary tract

- Macroscopy, microscopy: Renal, bladder and urinary tract malformations. Cystic kidney disease (congenital, acquired). Glomerulonephritis. Interstitial nephropathy. Acute tubular necrosis. Nefroangioscleroza. Hydronephrosis.

Renal cancer: Wilms tumor. Renal cell carcinoma. Acute and chronic cystitis.

Urothelial tumors of the bladder

10. Pathology of the male genital tract

- Macroscopy, microscopy: Penile malformations. The squamous cell carcinoma. Cryptorchidism. Testicular teratomas. Seminoma. Benign prostatic hyperplasia. Prostate carcinoma

11. Pathology of the female genital tract

- Macroscopy, microscopy: Cervical polyp. Cervical carcinoma: squamous cell carcinoma, adenocarcinoma. Endometrium: endometrial hyperplasia, endometrial polyp, endometrioid adenocarcinoma. Adenomyosis and endometriosis. Uterine leiomyoma. Ovarian tumors: tumors of the surface epithelium, granulosa tumor, teratomas. Gestational trophoblastic disease (hirsutiform mole, choriocarcinoma). Breast gland: malformations, mastitis, fibrocystic transformation, ductal hyperplasia, ductal papillomas. Benign tumors: fibroadenoma. Breast carcinoma. Thyroid tumor

12. Pathology of the osteoarticular system

- Macroscopy, microscopy: Osteonecrosis. Acute osteomyelitis. Chronic (non-specific, tuberculous) osteomyelitis. Fibrous dysplasia of the bone. Benign tumors: osteoma, osteoid osteoma, osteoblastoma, chondroma. Giant cell tumor of the bone. Malignant tumors: osteosarcoma, chondrosarcoma, Ewing's sarcoma. Infectious arthritis. Rheumatoid arthritis. Osteoarthritis. Gout

13. Pathology of leukocytes and lymphoganglionic system

- Macroscopy, microscopy: Acute lymphadenitis. Reactive changes (follicular hyperplasia, sinus histiocytosis). Non-Hodgkin's lymphoma. Multiple myeloma, plasmocytoma. Hodgkin's lymphoma. Langerhans cell histiocytosis

14. Pathology of the endocrine system

- Macroscopy, microscopy: Thyroid: Hashimoto's thyroiditis, goiter (diffuse, nodular, Graves-Basedow's disease), tumors (adenoma, papillary carcinoma, follicular carcinoma, medullary carcinoma). Adrenal: cortico-adrenal (hyperplasia / adenoma, carcinoma), medullary-suprarenal (pheochromocytoma, neuroblastoma)

15. Pathology of the nervous system

- Macroscopy, microscopy: Malformations. Meningitis. Cerebral abscess. Primary tumors: astrocytomas, glioblastoma, oligodendroglioma, medulloblastoma, meningioma. Brain metastases.

## References:

2. The handout of the course
3. The handout of the practical activities
3. Kumar V, Fausto N, Abbas A, Robbins & Cotran *Pathologic Basis of Disease*, 9<sup>th</sup> ed, 2014
4. David S, Rubin E, *Rubin's pathology: clinicopathologic foundations of medicine*, 7<sup>th</sup> ed, 2015

5. <http://library.med.utah.edu/WebPath/webpath.html>
6. <http://alf3.urz.unibas.ch/pathopic/intro.htm>
7. <http://www.pathologyoutlines.com/>
8. [www.medscape.org/](http://www.medscape.org/)
9. <https://www.cap.org/>

**Evaluation - standardized exam:**

- Written theory exam 70%
- Practical exam 20%
- Verification throughout the semester 10%

## PHARMACOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Pharmacology</b>
<b>Course coordinator:</b>	<b>Assoc. Prof. Ioana Corina Bocsan, MD, PhD</b>
<b>Department:</b>	<b>Functional Sciences</b>
<b>Discipline:</b>	<b>Pharmacology, Toxicology and Clinical Pharmacology</b>
<b>Course code:</b>	<b>MED31205 EN</b>

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		Hours / week.			hours / sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	1	-	28	14	-	58	100	4	Written + practical exam
II		1	1	-	28	14	-	33	75	4	Written + practical exam

L=lecture; PA=practical activities; CI=clinical internship

**Pre-requisites:** Knowledge of physiology and signaling through endogenous molecules (for Vth semester), Essential knowledge of microbiology (for VIth semester)

### General objectives:

At the end of the course, students achieve an informational core on: drugs related principles, national and international regulations about drugs, general pharmacokinetics, pharmacodynamics, pharmaco-economics and pharmacoepidemiology; drugs that regulate the basic functions of the body; chemotherapy

### Specific objectives:

At the end of the course students will be able to:

- Know the importance of setting major criteria for the effectiveness of medicines and the benefit / risk balance
- Know the pharmacokinetic-pharmacodynamic model
- Establish the criteria for selecting drugs according to the therapeutic objective

Know the principles of therapeutic strategy in the treatment with antibiotics, antivirals and other specific drugs

**Course content:**

**1st Semester**

1. General pharmacology. General pharmacokinetic
2. General pharmacology. General pharmacokinetic
3. General pharmacology. General pharmacokinetic
4. General pharmacodynamic. Pharmacoepidemiology. Farmacovigilance
5. Cholinergic nervous system. Cholinergic agonists
6. Cholinergic nervous system. Cholinergic antagonists.
7. Adrenergic nervous system. Adrenergic agonists
8. Adrenergic nervous system. Adrenergic antagonists
9. Serotonin. Antiserotoninic agents. Histamine. Antihistamines
10. Steroid hormones. Estrogens and antiestrogens. Progestatives and antiprogestatives. Androgenic hormones and antiandrogens
11. Steroid hormones. Corticosteroids
12. Steroid hormones. Corticosteroids
13. Thyroid hormones
14. Diabets mellitus treatment. Insulin. Oral antidiabetic drugs

**2nd Semester**

1. Chemotherapeutic agents used in infectious diseases. Betalactams. Fosfomycin. Glycopeptides and glycopospholipides
2. Aminoglycosides and aminocyclitols. Macrolides, linsosamides, streptogramines (MLS<sub>B</sub>).
3. Chloramphenisol. Tetracyclines. Ansamicines. Polypeptidic antibiotics. Quinolones
4. Antituberculostatic agents. Antileprae. Antifungal agents. Antiprotozoa agents. Antivirals.
5. Analgesic medication. Nonsteroidal antiinflammatory drugs (NSAIDs).
6. Opioids
7. Local anesthetics. General anethetics.

**Practical activities:**

**1st Semester**

1. General information about drugs. Source of information about drugs. Drugs ATC classification. Original and generic drugs
2. Dosage forms. Classification of dosage forma.
3. Pharmacokinetic. Pharmacokinetic parameters and their role. Mathemiatic formula to calculate pharmacokinetic parameters. Practical applications for the calculation of the main pharmacokinetic parameters.
4. Doses and posology
5. Medical prescription. Prescribing exercises. Anamnesis of medication

6. Medical prescription. Prescribing exercises. Anamnesis of medication
7. Patients information about treatment. Treatment compliance (information and compliance exercises using insulin and glucocorticoid administration scenarios).

### **2nd Semester**

1. Farmacovigilance
2. Antiinfectious therapy (1)
3. Antiinfectious therapy (2)
4. Antiinfectious therapy (3)
5. Pain treatment. Nonsteroidal antiinflammatory drugs. Opioids. Local and general anesthetics. (1)
6. Pain treatment. Nonsteroidal antiinflammatory drugs. Opioids. Local and general anesthetics. (2)
7. Pain treatment. Nonsteroidal antiinflammatory drugs. Opioids. Local and general anesthetics. (3)

### **References:**

1. Anca Dana Buzoianu – Farmacologie, vol I, Ed. Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2017
2. Buzoianu Anca Dana – Farmacologie, vol II, Ed. Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2006
3. Karen Whalen PharmD – Lippincott Illustrated Reviews: Pharmacology- Seventh, North American Edition, 2018
4. Katzung BG. – Basic and Clinical Pharmacology (14<sup>th</sup> ed) Mc Graw Hill 2017
5. Rang HP, Dale MM et al. Pharmacology 8<sup>th</sup> ed., Elsevier Churchill Livingstone, 2015
6. Goodman and Gilamn’s Manual of Pharmacology and Therapeutics, 13 th ed, Mc Graw Hill Publishing, 2017
7. Feather A, Randall D, Waterhouse M – Kumar și Clark Medicină clinică. Azamfirei L, Buzoianu AD, Gheonea ID- coordonatorii ediției în limba română, Ed. A 10-a, Ed.Hipocrate, București 2021
8. Merali Z, Woodfine JD(eds). Essential MedNotes 2016. 32<sup>nd</sup> ed. Toronto Notes for Medical Students, Inc, Toronto, 2016.
9. VI Șandor. Farmacografie. Reglementări, noțiuni practice. Editura UMF Cluj Napoca, 2014
10. <https://www.anm.ro> Nomenclatorul Medicamentelor
11. Memomed 2020/ Agenda Medicală 2020

### **Evaluation - standardized exam:**

- |                  |     |
|------------------|-----|
| ▪ Written exam   | 70% |
| ▪ Practical exam | 30% |

## HYGIENE

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Hygiene  
**Course coordinator:** Professor Monica Popa, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Hygiene  
**Course code:** MED31206EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	C	PA	CI				
I	Compulsory	1	1	-	14	14	-	32	60	2	Ongoing evaluation
II		2	2	-	28	28	-	69	125	5	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

At the end of the courses the students will be capable to design, use and justify in a correct manner measures for health promotion and disease prevention at individual and community level

### Specific objectives:

At the end of the courses the students will be capable to:

- To explain the complex relationship between environmental pollution and population health
- To identify correctly health dangers from the environment and medical institutions and to categorise them (physical, chemical, biological, irradiation dangers)
- To use the principles of food and nutrition hygiene (diet, food products, relationship with health)
- To propose and justify recommendations for prevention and control at individual and population level in order to minimise the risk on human health

### Course content:

#### 1<sup>st</sup> semester

1. The objective and role of Food Hygiene – component of preventive medicine. Daily energy expenditure in different population groups.
2. Macronutrients in human nutrition: roles, food sources, recommended daily intake, health effects of unbalanced intake
3. Micronutrients in human nutrition: roles, food sources, recommended daily intake, health effects of unbalanced intake
4. Animal foods: nutritional value, advantages and disadvantages, risks for human health
5. Nutritional value of vegetal foods, sugars, fats, oils and beverages (alcoholic and non-alcoholic); advantages and disadvantages, risks for human health
6. Risks of food contamination and food-borne diseases. Principles and methods of food preservation in relation to human health.
7. Evaluation of the nutritional status. Malnutrition – health effects and vulnerable subgroups. Diet peculiarities (vegetarianism, veganism, macrobiotism, crudivorism- raw veganism) and the associated risks upon human health.

## **2<sup>nd</sup> semestre**

1. The role of environmental hygiene – component of preventive medicine. Prophylaxis and its levels. The nature of environmental hazards affecting the human health.
2. Chemical hazards – the air pollution: sources of pollution, nature of pollutants, autopurification.
3. The risk evaluation: notions, steps. The direct effects of air pollution upon health: population groups at risk, the dynamic of pollutants at respiratory level.
4. The direct / indirect effects of air pollution upon health. Preventive measures.
5. Indoor pollution: exposure and health effects, prevention and control.
6. The water needs for individuals and communities: ensuring modalities, sources. Modalities of water pollution and autopurification.
7. The chemical hazards due to water consumption – elements of non-infectious water-related pathology: fluorine and iodine, water intoxication with nitrates, heavy metals.
8. Biological hazards due to water consumption - elements of infectious water-related pathology ( I)
9. Biological hazards due to water consumption - elements of infectious water-related pathology ( II)
10. Physical hazards – non-ionizing radiations (ultraviolets, light, infrared)
11. Physical hazards – ionizing radiations
12. Growth and physical development in children and youngsters: general characteristics, the laws of growth, influencing factors. The organization of scholastic and out-of-school activities.

13. Preventive measures against health risk behaviours in children, adolescents and young people.
14. Personalized counseling of children, adolescents and young people aiming the prevention of health risk behaviours

**Practical activities:**

**1<sup>st</sup> semester**

1. Hygienic requirements in food facilities. Identification of critical control points.
2. Estimation of individual energy expenditure and interpretation of nutritional risk. Case-study
3. Milk and dairy products in human nourishment: nutritional and hygienic aspects, health risks, case reports.
4. Meat, fish and eggs in human nourishment: nutritional and hygienic aspects, health risks, case reports.
5. Grains, fats and oils, canned foods in human nourishment: nutritional and hygienic aspects, health risks, case reports.
6. Evaluation methods of food consumption in medical practice
7. Notions of practical nutrition in different population groups

**2<sup>nd</sup> semestre**

1. Hazard analysis critical control points (HACCP) in healthcare facilities. The waters utilized in healthcare facilities.
2. Surveillance and control of bacterial contamination of air and surfaces in healthcare facilities.
3. Antiseptics and disinfectants used in health care facilities.
4. The wastes from medical activities
5. Hygiene of the medical staff (I)
6. Hygiene of the medical staff (II)
7. Hygiene of the medical staff (III)
8. Indoor pollution: Sick Building Syndrome
9. Fundamental conditions of the indoor habitat
10. Exposure history
11. Chemical indicators of water potability and associated health risks.
12. Assessment of growth and development in children and adolescents. Interpretation of physical development data.
13. Prevention of health risk behaviors in young people
14. Health education in school facilities

**References:**

**Mandatory bibliography**

1. Popa Monica «Food Hygiene - Textbook for Medical Students», Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2016, ISBN 978-973-693-672-2

2. Popa Monica «Environmental Hygiene - Textbook for Medical Students», Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2016, ISBN 978-973-693-671-5
3. Lecture scripts (electronic format)

**Optional bibliography:**

1. Deshpande S.S. - „Handbook of Food Toxicology” – Marcel Dekker, Inc, USA, 2012.
2. Bender, D.A. - „Introduction to Nutrition and Metabolism” 4<sup>th</sup> ed.,CRC Press, 2008
3. M.E. Conti - “Biological Monitoring – Theory and Applications”, WIT Press, 2008
4. W.Ott, A.Steinemann, L. Wallace - „ Exposure analysis”, CRC Press, 2006
5. Yassi A., Kjellstrom T., de Kok T., Guidotti T.L. - "Basic Environmental Health", Oxford Univ. Press, 2001.

**Evaluation:**

- Written exam 60 %
- Practical exam 30 %
- Verification throughout the semester 10%

## BASIC PRACTICAL SKILLS. INTERPROFESSIONAL EDUCATION

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Basic practical skills  
**Course coordinator:** Prof. Dr. Gherman Claudia, MD, PhD  
**Department:** Medical Education  
**Discipline:** Skills – Humanistic Sciences  
**Course code:** MED3107EN

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credits	Evaluation	
		hours/week			hours/sem.									
		L	PA	CI	L	PA	CI							
I	Compulsory	0,5	1,5	-	7	21	-	32	60	2	Verification			

L=lectures; PA=practical activities; CI=clinical internships

**Pre-requisite:** Notions learned in the first year at the First Aid course

### General objectives:

The aim of this course is learning and exercising advanced clinical labours necessary for the profession of medical doctor

### Specific objectives:

- Learning and exercising labours indispensable to the practicing of the medical profession (emergency medicine, surgery, gynaecology and ATI) on mannequins and simulators.
- Mastering the base and advanced principles, as well as providing the first aid qualified in the most important medical – surgical emergencies, in simulated situations.
- Learning by practicing the evaluation of the critical patient and of the management of the emergency situations.

### Course contents / Practical activities:

#### EMERGENCY MEDICINE

1. Air path suction by devices and non-devices
2. Giving oxygen: simple mask, nose cannula, mask with reservoir, Venturi
3. BLS: ventilation – mouth to mouth (with the savor handkerchief), mouth to mask, with balloon and mask  
BLS: CT (adult, pregnant woman); Defibrillation (paddles/patch)
4. Intraosseous access
5. Immobilizing the fractures
6. The control of the external hemorrhages

## **SURGERY I**

1. Introducing the sterilization, control, keeping the sterility
2. Standard and additional precautions against the infections
3. Bandages
4. Introducing the nose-gastric tube

## **SURGERY II**

1. Incision and draining the superficial injuries
2. Preventive and curative drainage
3. Surgical suture
4. The technique of a simple bandage
5. Caring for wound and stomas

## **SURGERY III**

1. Subcutaneous, intradermal, intramuscular, intravenous injections
2. Rectal touch
3. Assembling urinary probe

## **ATI**

1. Venous puncture
2. Assembling an i.v. perfusion
3. Arterial puncture
4. Administering oxygen
5. Monitoring EKG, SpO<sub>2</sub>, TA, AV, temperature

## **References:**

1. Katrina F. Hurley, *OSCE and Clinical Skills Handbook*, Elsevier Science Health Science Division, 2005
2. *OSCEs for Medical Students*. Adam Feather, John Stuart Penton Lumley, Ramanathan Visvanathan, PasTest Ltd, 2004
3. *OSCE Stations for Medical Finals*. Adam Feather, Ashling Lillis, Tony Joy, John S P. Lumle, Pastest, 2012.
4. *OSCE Cases with Mark Schemes*. Tamara North, Dr., Jeremy F. Lynch, Aneesha Verma, Anshan Publishers, 2012.
5. *Surgery, OSCE and Data Interpretation*. Nadeem Nadeem, Holly Holly, Nadeem Hasan, Holly Sitsapesan Taylor & Francis Group, 29 mar. 2013.
6. Boet S, Granry JC, Savoldelli G. *La simulation en santé - De la théorie à la pratique*. Ed. Springer-Verlag Paris, 2013.
7. Levine A.I, DeMaria S Jr., Schwartz A.D., Sim A.J. *The Comprehensive Textbook of Healthcare Simulation*, Ed. Springer-Verlag New York, 2013.

## **Evaluation:**

- Exam 80%
- Verification throughout the semester 20%

## IMMUNOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Immunology  
**Course coordinator:** Prof. Dr. Diana Mihaela Deleanu, MD, PhD  
**Department:** Functional Sciences  
**Discipline:** Immunology and Allergology  
**Course code:** MED3209EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	1	1	-	14	14	-	22	50	2	Verification

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Biochemistry, Cellular and molecular biology, Physiology and Physiopathology, Medical terminology

### General objectives:

At the end of the course students will be able to achieve the correct approach, diagnostic and therapeutic, of the patient with immunological pathology.

### Specific objectives:

At the end of the course the student will be able to:

- to perform the anamnesis and the correct and complete objective examination of the patients with immune pathology;
- to formulate in the first stage the clinical diagnosis (clinical interpretation) or the most probable clinical diagnoses;
- to formulate an adequate exploration plan for the confirmation / refutation of each diagnosis that he suspected;
- to interpret the results of the investigative explorations
- to integrate the clinical data with those of the complementary explorations for the formulation of the positive diagnosis (positive diagnoses);
- to formulate the eventual differential diagnoses and to exclude / confirm, with the help of the clinical / laboratory elements these diagnoses;
- to specify the evolutionary possibilities and the prognosis of the digestive disease, spontaneously and under treatment;

- to formulate a therapeutic plan, specifying the principles and means of treatment, in accordance with current guidelines and adapted to the patient's particularities;
- to specify the criteria for monitoring the effectiveness of the treatment, as well as the possible causes of failure and / or adverse drug effects;
- to correctly assess the conditions that reflect the patient's work capacity and, insofar as this is necessary, to formulate a recovery plan;
- to establish, for chronic diseases, a dispensary plan.
- to evaluate different principles of prophylaxis (isolation, avoidance, vaccination, prophylactic therapy, etc.)

**Course content:**

1. Organs and cells involved in the immune response. Defence mechanisms – nonspecific and specific
2. Antigens, antibodies. Monoclonal antibodies The Complement system
3. Cytokines, cell adhesion molecules, chemokines, receptors, apoptosis
4. Histocompatibility antigens. Tumors. Tumor markers. Transplant.
5. Primary and secondary immunodeficiencies, diagnosis, investigations, therapies, examples.
6. Hypersensitivity reactions. Autoimmunity – mechanisms, examples. Immunosuppressive treatment.
7. Immunomodulation – principles of immune system modulation: immunostimulation, immunosuppression. Immunomodulatory treatments.

**Practical activities:**

1. Allergens, Immunoglobulins, specific and nonspecific immune response (demonstrations)
2. Clinical evaluation (lymph nodes and spleen), hematological investigations, immunograms, for inflammatory process
3. Immunological exploration (laboratory immunological techniques, allergological skin tests). Visit to the clinical laboratory.
4. Presentations of clinical cases of autoimmune diseases
5. Presentations of clinical cases of immunodeficiencies.
6. Tumor case presentations, transplant
7. Visit to the clinical department, anamnesis, objective examination, paraclinical explorations in diseases with an immunological component

**References:**

1. Kenneth Murphy, Janeway's Immunobiology 8th Edition, Garland Science, 2014
2. Abul Abbas Andrew H. Lichtman Shiv Pillai, Cellular and Molecular Immunology, 9th Edition, 2017

3. N. Franklin Adkinson Jr. et al, Middleton's Allergy, 8th Edition, 2014

**Evaluation:**

- Written exam            65%
- Practical exam         35%

## ROMANIAN LANGUAGE

**Study field:** Health  
**Study program:** Medicine  
**Course title:** Romanian language  
**Course coordinator:** Lecturer Andreica Alina  
 Assist. prof. Stefana Duncea  
 Assist. prof. Anca Hassoun  
**Department:** Medical Education  
**Discipline:** Modern Languages

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours / semester						
		L	PA	CI	C	PA	CI				
I	Compulsory	-	3	-	-	42	-	2	44	Written+oral+ongoing assessment	
II		-	3	-	-	42	-	2	44		

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** -

### General objectives:

Development of competences in general and medical Romanian

### Specific objectives:

At the end of the seminar, the students will be able to:

- acquire information efficiently, using written and audio materials specific to the B1 level
- write various types of texts: emails, formal requests, CVs, letters of intention, according to their language level
- produce an oral discourse (monologue or dialogue) in both formal and informal contexts, specific to the B1 level

### Practical activity:

1. Conditions, wounds, type of pain. Pronouns in the accusative and in the dative case. Verbs with reflexive pronouns in the dative case.
2. Conditions, wounds, type of pain. Doctor-patient dialogues.
3. The e-mail. The doctor-patient written communication.
4. At the hospital, spaces and people. Prepositions in the genitive case. The imperfect tense of the verb.
5. At the hospital. Monologue - description and comparison.
6. At the hospital. The application.

7. History taking. The interrogative and the relative pronouns.
8. History taking. The medical interview. Notes on the anamnesis.
9. Clinical examination. The imperative verb.
10. Clinical examination. The explanatory monologue. Clinical observation sheet.
11. Paraclinical investigations and diagnosis. Derived adjectives.
12. Paraclinical investigations and diagnosis. Prepositions. Explanations and hypotheses.
13. Paraclinical investigations and diagnosis. Ultrasound bulletin.
14. 1<sup>st</sup> semester assessment
15. Internal Medicine: Cardiology. Genitive article and possessive pronoun. Obligation and prohibition.
16. Internal Medicine: Pulmonology. The medical letter.
17. Internal Medicine: Gastroenterology. Demonstrations. Association and opposition.
18. Internal Medicine: Nephrology. Doctor-doctor dialogue. The advice. The debate. Informal letter with medical advice. The medical report.
19. Internal Medicine: Rheumatology. The Supine. Conditional verbs.
20. Internal Medicine: Orthopedics. Teacher-student dialogue. Argumentation.
21. Ophthalmology. Gerund verbs. Adverbial phrases.
22. ENT. Case presentation. Permission. The medical blog.
23. Dermatology. The negative pronoun. Temporal relationships.
24. Allergology. Reparatory acts. Case report.
25. Neurology. The Passive voice.
26. Psychiatry. Information about a mental act/ability. Synthetic medical record.
27. The Romanian patient: intercultural aspects. Doctor-patient interaction at UPU. Monologue: combating labels and clichés. Writing on some pictures.
28. Summative assessment.

### References:

1. Anca Ursa, Nora Mărcean, *Limba română medicală. Româna pentru obiective specifice*, Cluj-Napoca, Editura Limes & Risoprint, 2018.
2. Byram, M., Barrett M., Lázár I., Mompoin-Gaillard P., Philippou S., *Developing intercultural competence through education*, Council of Europe Pestalozzi Series, No. 3, Council of Europe Publishing, 2014. URL: <http://www.coe.int/t/dg4/education/pestalozzi/Source/Documentation/Pestalozzi3.pdf>
3. Biriş, G., *Limba medicală. Anatomie. Curs pentru studenții străini din anul pregătitor*. București, Editura Universității din București, 2015.
4. Castelotti, V., Moore, D., *Representations sociales des langues et enseignements, Guide linguistique pour l'élaboration des politiques linguistiques éducatives en Europe - De la diversité linguistique à*

- l'éducation plurilingue. Etude de référence*, Conseil de l'Europe, Strasbourg, 2002.
5. Common **European Framework of Reference for Languages**, 2003. URL: [http://www.coe.int/t/dg4/linguistic/source/framework\\_en.pdf](http://www.coe.int/t/dg4/linguistic/source/framework_en.pdf).
  6. Common european framework of reference for languages: Learning, teaching, assessment. Companion Volume with new descriptors. Provisional edition, September 2017, URL: <https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/168074a4e2>
  7. *Caiet de abilități practice pentru studenții Facultății de Medicină UMF „Iuliu Hațieganu” Cluj-Napoca*. Coordonator Valentin Muntean. Cluj-Napoca, Editura Medicală Universitară „Iuliu Hațieganu”, 2012.
  8. *Gramatica de bază a limbii române (GBLR)*, Academia Română - Institutul de lingvistică Iorgu Iordan. București, Editura Univers Enciclopedic, 2008.
  9. Kurtz S.M., Silverman J.D., Benson J. and Draper J., *Marrying Content and Process in Clinical Method Teaching*, in [Academic Medicine](#) 78(8):802-9, September 2003.
  10. *Larousse Dicționar de Medicină*. București, Editura Univers Enciclopedic, 1998.
  11. McCarter, S., *Oxford English for Careers. Medicine*, 1 and 2. Oxford University Press, 2009, 2010.
  12. Mandelbrojt-Sweeney, M., *Limba română pentru medici și asistente*. Iași, Ed. Polirom, 2006.
  13. Pavel, E., *English for Medical Students*. Cluj-Napoca, Casa Cărții de știință, 2016.
  14. Platon, E.; Sonea, I.; Vasii, L.; Vlăcu, D. Descrierea minimală a limbii române. A1, A2, B1, B2, Cluj-Napoca, Editura Casa Cărții de Știință, 2014. (<http://video.elearning.ubbcluj.ro/wp-content/uploads/2016/09/Descrierea-minimala-a-limbii-romane-12-IULIE-2016.pdf>).

#### **Evaluation:**

- Oral assessment 50 %
- Students' activity during the practical course 50 %

## 4<sup>th</sup> YEAR

### INTERNAL MEDICINE I. GASTROENTEROLOGY – 9 CREDITS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Internal Medicine  
**Course coordinator:** Procopet Bogdan-Modul III,  
 Sparchez Zeno-Modul IV, MD, PhD  
**Department:** Internal Medicine  
**Discipline:** Medical Clinic III  
**Course code:** MED4101EN

Semester	Courses type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	6	-	15	42	-	106	102	250	9	Written + practical exam

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites:** Biochemistry, Physiology, Pathophysiology, General Morphopathology, Semiology year III

#### General objectives:

- To provide theoretical support and cultivate the skills, aptitudes and attitudes essential to the practice of medicine, in the field of the pathology of internal organs.

#### Specific objectives:

- To have the approach of the patient with a pathology of the digestive system:
  - notions of epidemiology, etiopathogeny, pathology, positive diagnosis, differential diagnosis, complications, evolution, prognosis and individualized medical therapy
- skills and abilities that students must have after the crossover of the module of internal medicine and gastroenterology and learning the concepts of digestive and metabolic pathology:
  - The practice of mandatory steps, leading to the formulation of the diagnosis: history, clinical examination, interpretation of clinical data (formulation of the clinical diagnosis), indication and interpretation of the

- explorations, motivation and formulation of the final diagnosis;
- Practical realization of treatment plan, knowledge of treatment monitoring criteria;
  - Communication skills with the patient.

**Course content:**

**Chapters:**

1. Pathology of the digestive tract
2. Hepatic and biliary pathology
3. Pathology of the pancreas
4. Metabolic pathology (porphyria)

**Sections:**

1. Pathology of the digestive tract: Pathology of the esophagus. Gastric and duodenal ulcer. Pathology of the operated stomach. Zollinger-Ellison syndrome. Benign and malignant gastric tumors. Malabsorption syndrome. Enteropathies. Inflammatory intestinal diseases. Hemorrhagic rectocolitis. Crohn's disease. Benign and malignant tumors of the colon. Functional gastrointestinal pathology (functional dyspepsia, constipation, irritable bowel syndrome).
2. Hepatic and biliary pathology: Hepatobiliary pathology syndromes (jaundice, cholestasis, ascites, portal hypertension, hepato-portal encephalopathy, gastrointestinal bleeding of oesophageal variceal origin). Diseases of the cholecyst and the biliary tree. Chronic hepatitis (etiopathogenesis, diagnosis, therapeutic approach). Chronic viral hepatitis. Autoimmune hepatitis. Chronic hepatopathies of toxic and / or metabolic etiology. Ethanolic hepatopathies. Non-alcoholic steatohepatitis. Hepatic cirrhosis (etiopathogenesis, diagnosis, complications, therapeutic approach, particular etiological forms: primary biliary cirrhosis, cirrhosis secondary to genetic alterations in the metabolism of copper and iron). Biliary and hepatic tumor pathology
3. Pancreas: Acute pancreatitis. Chronic pancreatitis Tumor pathology of the exocrine and endocrine pancreas.
4. Metabolic pathology: Porphyria.

**Practical activities:**

1. During the clinical internships, students will approach (perform anamnesis, eg objective and data synthesis) and discuss under the guidance of group assistants the following types of clinical cases, having the obligation to record the observations in their internship books:
  - Pathology of the esophagus
  - Acute or chronic gastritis
  - Gastric or duodenal ulcer
  - Malabsorption syndromes. Enteropathy.
  - Inflammatory bowel disease. Hemorrhagic rectocolitis. Crohn's disease

- Functional gastrointestinal pathology (functional dyspepsia, constipation, irritable bowel syndrome).
- Gastric tumors. Benign and malignant tumors of the colon
- Syndromes of hepatobiliary pathology: jaundice, cholestasis, encephalopathy, ascites, variceal HDS
- Diseases of the biliary tree and / or the gallbladder
- Chronic hepatitis
- Liver cirrhosis
- Liver tumors
- Acute or chronic pancreatitis
- Pancreatic tumors

2. During the clinical internship, in addition to the activities carried out in the patient rooms and in the paraclinical examination cabinets, the students will participate in other activities such as:

- diagnostic / therapeutic news - one weekly meeting (Tuesdays)
- practical demonstrations of diagnostic exams - one weekly meeting (Wednesday)
- clinical observation of the week - presentation of a special clinical case, followed by discussion of the case - one weekly meeting (Thursday)
- news from the drug sphere - one weekly meeting (Friday)
- interactive group exercises to understand the clinical reasoning and therapeutic prescription exercises - one meeting per week (Friday)

3. During the clinical internship, in addition to the activities carried out in the patient rooms and in the paraclinical examination rooms, the students will participate on Friday in the exploration courses:

4. Possibilities of exploration of the esophagus
5. Diagnostic and therapeutic superior digestive endoscopy
6. Exploration of the small intestine. Videocapsula. Spiral enteroscopy
7. Diagnostic and therapeutic inferior digestive endoscopy
8. Diagnostic and interventional abdominal ultrasound
9. Diagnostic and therapeutic echoendoscopy
10. ERCP - diagnostic and therapeutic cholangiopancreatography.

### References:

1. Tantau M, Sparchez Z, Seicean A. Gastroenterologie. Hepatologie. Manual pentru studenti. Ed. Medicală Universitară "Iuliu Hatieganu" Cluj-Napoca, 2017
2. Pascu O, Grigorescu M, Acalovschi M, Andreica V. Gastroenterologie. Hepatologie. Bazele practicii clinice. Ed. Medicală Universitară "Iuliu Hatieganu" Cluj-Napoca, 2012.
3. Stoica V, Scripcaru V. Compendiu de specialitati medico-chirurgicale. Ed. Medicala, Bucuresti 2016

4. Chen YA, Tran C. Toronto Notes 2011. Ed. Toronto Notes for Medical Students 2011.

Treaties, Romania:

1. Grigorescu M. (sub red.) Tratat de gastroenterologie, vol.I-II, Ed. Medicala Nationala 2002.
2. Grigorescu M. (sub red.) Tratat de hepatologie, Ed. Medicala Nationala 2004.
3. Grigorescu M, Irimie A, Beuran M (eds). TRATAT DE ONCOLOGIE DIGESTIVA. Vol. I. Cancerul esofagian si gastric. Editura Academiei Romane, 2013
4. Grigorescu M, Irimie A, Beuran M (eds). TRATAT DE ONCOLOGIE DIGESTIVA Vol II. Cancerul ficatului, cailor biliare si pancreasului. Editura Academiei Romane, 2014.
5. Grigorescu M, Irimie A, Beuran M (eds). TRATAT DE ONCOLOGIE DIGESTIVA Vol III. Cancerul intestinului subtire, cancerul colo-recto-anal, tumori stromale gastrointestinale, tumori neuroendocrine, tumorile peritoneului, limfoame primitive ale tractului gastrointestinal. Editura Academiei Romane, 2015.

International treaties:

1. Longo DL (eds). Harrison's Principles of Internal Medicine, editia 19, Ed. McGraw-Hill 2015.
2. Toronto notes 2020 (Ed 36)
3. Feldman M, Friedam SL, Sleisenger MH. SLEISENGERS AND FORDTRANS GASTROINTESTINAL AND LIVER DISEASES. 7<sup>th</sup> Edition. Elsevier Science, 2002
4. Podolsky DK (eds). YAMADA'S Textbook of Gastroenterology. 6<sup>th</sup> Edition. Wiley B;ackwel, 2016
5. Benhamou JP (eds). Traite d'hepatologie Clinique. Ed. Medicine-Sciences Flammarion, Paris 2005
6. Ghiduri ale societatilei de specialitate (nationale/internationale), ghiduri nationale

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## CLINICAL PHARMACOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Clinical Pharmacology  
**Course coordinator:** Assoc. Prof. Ioana Corina Bocşan, MD, PhD  
**Department:** Functional Sciences  
**Discipline:** Pharmacology, Toxicology and Clinical Pharmacology  
**Course code:** MED4102EN

Semester	Courses type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	1,5	1	-	21	14	-	40	75	3	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** General pharmacology 3rd year, Physiology, Pathophysiology, Methodology of scientific research

### General objectives:

At the end of the course, students achieve an informational core on drugs that are used to treat different diseases, so as to have competencies on the drugs learned for the correct therapeutic management of the patient.

### Specific objectives:

At the end of the course students will be able to:

- list the classes of drugs used in digestive, metabolic and blood diseases; to know representatives of these classes
- to explain the mechanisms of action of drugs used in digestive, metabolic, hematological and renal diseases
- mention the side effects of the medication and manage the adverse reactions of drugs used in digestive, metabolic, renal or blood diseases
- to efficiently manage the patient, based on his/her characteristics
- to monitor drug therapy in digestive, metabolic and blood diseases
- to use methods to prevent prescription errors
- to explain the importance of gender, age and pharmacogenetic aspects in the variability of patients' individual response
- students will be familiar with the principles of treatment of acute intoxications

### Course content:

1. Introduction in clinical pharmacology. Clinical trials
2. Drugs used in peptic ulcer. Antisecretory drugs. Protective agents. Antacids. Therapy of Helicobacter pylori infection.
3. Prokinetic agents. Antinausea and antiemetic agents. Antispasmodic drugs. Stimulants of gastric secretion. Pancreatic enzymes. Biliary acids.
4. Antidiarrheal and laxatives. Intestinal antiinflammatory drugs.
5. Drugs used in hepatic diseases. Antivirals used in chronic hepatitis
6. Diuretics
7. Drugs used in obesity treatment. Lipid lowering agents.
8. Drugs used in anemia treatment. Stimulants of hematopoietic functions
9. Anticoagulants
10. Antiplatelet and hemostatic agents. Fibrinolytic agents

**Practical activities:**

1. Stages of correct prescribing. Therapy of peptic ulcer
2. Therapy of peptic ulcer. Therapy of H. Pylori infection
3. Antinausea and antiemetic treatment in different clinical situation. Antidiarrheal treatment Therapy of chronic constipation
4. Therapy of inflammatory bowel diseases. Therapy of chronic hepatitis
5. Therapy of dyslipidemia. Therapy of obesity.
6. Diuretic medication. Therapy of coagulation disorders
7. Therapy of anemia

**References:**

1. Anca Dana Buzoianu – Farmacologie. Curs pentru studenții anului IV, Ed. Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2015
2. Karen Whalen PharmD – Lippincott Illustrated Reviews: Pharmacology- Seventh, North American Edition, 2018
3. Katzung BG. – Basic and Clinical Pharmacology (14<sup>th</sup> ed) Mc Graw Hill 2017
4. Rang HP, Dale MM et al. Pharmacology 8<sup>th</sup> ed., Elsevier Churchill Livingstone, 2015
5. Goodman and Gilman's Manual of Pharmacology and Therapeutics, 13<sup>th</sup> ed, Mc Graw Hill Publishing, 2017
6. Feather A, Randall D, Waterhouse M – Kumar și Clark Medicină clinică. Azamfirei L, Buzoianu AD, Gheonea ID- coordonatorii ediției în limba română, Ed. A 10-a, Ed. Hipocrate, București 2021
7. Merali Z, Woodfine JD(eds). Essential MedNotes 2016. 32<sup>nd</sup> ed. Toronto Notes for Medical Students, Inc, Toronto, 2016. Dictionnaire VIDAL 2019-VIDAL France
8. <https://www.anm.ro> Nomenclatorul Medicamentelor
9. Memomed 2020/ Agenda Medicală 2020

**Evaluation:**

- Written exam 70%
- Practical exam 30%

## NEPHROLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Nephrology  
**Course coordinator:** Prof. Ina Maria Kacso, MD, PhD  
**Lecturer Diana Tania Moldovan, MD, PhD**  
**Department :** Internal Medicine  
**Discipline :** Nephrology  
**Course code :** MED4103EN

Semester	Type of the course	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/week						
		L	PA	CI	L	PA	CI				
I	Compulsory	3	-	3	21	-	21	33	75	3	Written + practical exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Renal physiology, Renal morphopatology

### General objectives:

Diagnostic and therapeutic approach of renal pathologies.

### Specific objectives:

Providing basic notions on approaches of renal patients, as well as diagnostic procedures (renal biopsy included) and specific treatment options including renal replacement therapy (hemodialysis, peritoneal dialysis, renal transplantation).

### Course / Practical activities content:

1. Glomerulopathies
  - Introduction
  - glomerular syndroms
  - primary glomerulopathies
2. Secondary glomerulopathies
3. Acute kidney injury
4. Chronic kidney disease
5. Tubulointerstitial nephropathies, urinary tract infections
6. Vascular nephropathies, diabetic nephropathy, kidney and the pregnancy, genetic nephropathies
7. Water, electrolyte and acid-base disturbances.

**References:**

1. MOLDOVAN, DIANA TANIA LUMINITA, Nephrology: a student's guide; Editura Medicala Universitara "Iuliu Hatieganu", 2018, ISBN 978-973-693-845-0
2. Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc

**Evaluation:**

- Written exam 60 %
- Practical exam 40 %

## HAEMATOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Haematology</b>
<b>Course coordinator:</b>	<b>Lecturer Tunde Torok, MD, PhD</b> <b>Lecturer Ciprian Tomuleasa, MD, PhD</b>
<b>Department:</b>	<b>Oncology</b>
<b>Discipline:</b>	<b>Haematology</b>
<b>Course code:</b>	<b>MED4104EN</b>

Semester	Courses Type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.								
		L	PA	CI	L	PA	CI						
I	Compulsory	1,5	1,5	-	21	21	-	33	75	3	Written + practical exam		

L = lectures; PA = practical activities; CI = clinical internship

### Pre-requisites:

- Physiology, Genetics, Cell Biology, Semiology

### General objectives:

- Knowing the diagnostic approach in the main hematological syndromes: anemia, bleeding disorders, disorders of leukocytes, disorders of the spleen, etc.
- Knowing the diagnostic approach and principles of treatment in the main hematological disorders

### Specific objectives:

- Diagnostic approach of a patient with anemia.
- Diagnostic approach to the bleeding disorders
- Diagnostic approach to the leukocytes disorders
- Knowing the diagnostic approach and principles of treatment in the main hematological disorders
- Knowing the indications of bone marrow biopsy, lymph node biopsy, bone marrow aspiration, etc.
- Diagnostic approach of the lymph node and spleen disorders.

### Course content:

**Course 1 – 3 h:** Normal Hematopoiesis and its exploration

**Course 2:** The anemias. Classification, pathophysiology, diagnosis, management. Iron deficiency anemia. Anemia of chronic disorders.

Megaloblastic anemias: vitamin B 12 and folic acid deficiency. The congenital hemolytic anemias: hereditary spherocytosis, glucose-6-phosphate dehydrogenase and pyruvate-kinase deficiency, thalasemias, sickle cell anemia. The acquired hemolytic anemias: autoimmune hemolytic anemias / warm and cold autoantibodies / paroxysmal nocturnal hemoglobinuria

**Course 3:** Acute leukemias , Aplastic anemia, Myelodysplastic syndromes, Stem cell transplantation / bone marrow, peripheral stem cells; etiopathogenesis, classification, diagnosis, prognostic factors and treatment

**Course 4:** Chronic Myeloproliferative Diseases: Chronic Myeloid Leukemia, Polycythemia vera, Primary Myelofibrosis: etiopathogenesis, clinical presentation, prognostic, complications, treatment

**Course 5:** Chronic lymphoid leukemias: classification, etiopathogenesis, diagnosis, prognostic factors, treatment. Malignant monoclonal gammopathies: Pathophysiology, pathogenesis, classification, criteria of diagnosis, prognostic factors, treatment

**Course 6:** Malignant lymphomas. Classification, pathogenesis, histopathology, staging, prognosis and treatment: Hodgkin's disease, Non Hodgkin's lymphomas. Blood transfusion. Generalities. Blood grouping, leucocyte and platelet antigens. The use of blood components. Posttransfusional reactions: diagnosis and management

**Course 7:** Disorders of hemostasis: pathophysiology of hemostasis, exploration of hemostasis, classification of bleeding disorders, principles of treatment. Platelet disorders / quantitative and qualitative – congenital and acquired

### References:

1. Andrei Cucuianu, Mihnea Zdrengea, Steve Johnson, Mariana Patiu, Calin Coldea, Bogdan Fetica – *Manual of Clinical Hematology*. Ed. Casa Cartii de Stiinta, Cluj Napoca, 2011
2. M. Wintrobe - *Clinical Hematology*, Lea & Feboiger, Philadelphia, London, 2016.
3. Delia Dima, Mariana Patiu, Anca Bojan, Ciprian Tomuleasa, *Hematologia în imagini*, Ed. Eikon, 2016
4. Bojan A. (coord), *Introducere în hematologia clinică*, Ed. Casa Cărții de Știință, Cluj-Napoca, 2017
5. Torok-Vistai T, Bojan A, *Algoritmi de diagnostic în hematologie*, Ed. Casa Cărții de Știință, Cluj-Napoca, 2017
6. Mirali S, Seneviratne A (ed). *Toronto Notes 2020*. 36th Edition. Toronto Notes for Medical Students, Inc

### Evaluation:

- Written exam 70%
- Practical exam 30%

## CLINICAL BIOCHEMISTRY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Clinical biochemistry  
**Course coordinator:** Prof. Alexandra Crăciun, MD, PhD  
**Departament:** Molecular Sciences  
**Discipline:** Medical Biochemistry  
**Course code:** MED4105EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	1	-	14	7	-	29	50	2	Written+ practical exam

L = lectures; PA = Practical Activities; CI = clinical internship

**Pre-requisites:** -

**General objectives:**

- Learning and understanding of some biological mechanisms of high complexity and difficulty
- Functional exploration of body's systems
- Development of an observation sense and critical thinking, that are essential for the future's medical profession

**Specific objectives:**

- Acquiring of medical terms, of the necessary knowledge for integration of the functions from the molecular to general level, from the tissue to the organ, to understand the functionality of different organs, systems, and the interactions amongst them
- Training to properly use of the devices and laboratory materials, including the computerized methods, to investigate some physiological mechanisms and some physiological constants and parameters
- Acquiring of the capacity to synthesize the studied notions, and to search for the information in the reference's material
- Training to interpret the data found in the information/reference's sources

**Course content:**

1. Plasma proteins: types of dysproteinemias, plasma protein deficiencies. Diagnostic significance of tumoral markers.
2. Significance and diagnostic utility of serum enzyme changes .
3. Laboratory examinations in liver and gastrointestinal tract pathology.
4. Laboratory explorations of basic and hydroelectrolytic acid balance. Biomarkers for exploring renal pathology.
5. Lipids and lipoproteins: lipid transport, laboratory explorations in lipid metabolism.
6. Laboratory diagnosis of primary and secondary dyslipidemias.
7. Laboratory explorations in abnormalities in carbohydrate and uric acid metabolism.
8. Disorders of calcium, phosphorus and magnesium metabolism.
9. Laboratory explorations in osteo-articular diseases
10. Iron and hemoglobin metabolism.
11. Laboratory explorations in iron and copper deficiency and overload.

**Practical activities:**

1. Clinical laboratory: organization, stages of the testing cycle  
Factors influencing the results of laboratory tests; types of errors and their prevention
2. Importance and correct indication of laboratory tests depending on the clinical context (test panels in different pathologies)
3. Exploring the acid-base balance  
Exploring hemostasis  
Interpretation of analysis bulletins, discussion of clinical cases with examples from: cardiovascular, digestive, renal pathology, metabolic syndrome and diabetes, and osteo-articular, imbalances of calcium, magnesium, iron, phosphorus metabolism

**References:**

1. Alexandra M. Crăciun. *Essentials of physiology and clinical biochemistry*. Editura Mega, Cluj-Napoca 2019.
2. Bishop ML, Fody EP, Schoeff LE. *Clinical Chemistry. Techniques, Principles, Correlations*. 6th Edition 2010, Wolters Kluwer, Lippincot Williams &Wilkins.
3. Ioana Brudașcă, Cristina Cătană, Alexandra Crăciun, Alina Duțu, Simona Gheorghe, Ciprian Silaghi. *Clinical Biochemistry. Guidelines of practical works*. Editura Mega, Cluj-Napoca 2018.
4. [www.labtestsonline.org](http://www.labtestsonline.org)

**Evaluation:**

- Written exam 70%
- Practical exam 30%

## OPHTHALMOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study Program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Ophthalmology</b>
<b>Course coordinator:</b>	<b>Assoc. Prof. Cristina Nicula, MD, PhD</b>
<b>Department:</b>	<b>Surgical specialties</b>
<b>Discipline:</b>	<b>Ophthalmology</b>
<b>Course code</b>	<b>MED4106 EN</b>

Sem.	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours / week			Hours/sem								
		L	PA	CI	L	PA	CI						
I	Compulsory	2	4	-	14	28	-	48	90	3	Written + practical exam		

L = lectures; PA = Practical Activities; CI = clinical internship

**Pre-requisites:** Anatomy, Physiology, Morphopathology

### General objectives:

- Learning the basic principles of ophthalmology, proving the importance of ophthalmic knowledge for general pathology.

### Specific objectives:

- Acquiring the basic skills useful for general practice: examining the eye in daylight, instillations, ointment administration, eyelid exam, foreign body extraction, visual acuity measurement, ophthalmoscopic exam, ability to recognize the most frequent pathology (hordeolum, conjunctivitis, minor traumatism).

### Course Content:

- Eye Physiology: Visual Function, Refraction, Binocular Vision.
- Pathology of ocular annexes: Orbit, Eyelid, Tear system, Conjunctiva
- Eye Pathology: Cornea, Uvea, Lens, Retina, Optic Nerve, Glaucoma, Cataract
- Ocular Traumatism

### Practical activities:

- Anatomy of the visual analyzer. Clinical observation sheet in ophthalmology
- Examination of the previous pole. Ophthalmological semiology
- Functional ophthalmological examination

4. Ocular refraction
5. Binocular vision - examination methods
6. Clinical cases: eyelids, conjunctiva, cornea, orbit, tear apparatus, cataracts, glaucoma, retina, optic nerve, trauma.

**References:**

1. Cristina Nicula, Ophthalmology, Ed. Medicală Universitară „Iuliu Hațieganu”, ISBN 978-973-693-595-4, 2014
2. Olver J, Cassidy L, Jutley G, Crawley L, Ophthalmology at a glance, ISBN 978-1-405-18473-1, Blackwell Publishing Ltd, Oxford, 2014
3. Root T, OphthoBook – the free ophthalmology textbook for new students, <https://timroot.com/ophthobook>

**Evaluation:**

- |                  |     |
|------------------|-----|
| ▪ Written exam   | 70% |
| ▪ Practical exam | 30% |

## UROLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Urology</b>
<b>Course coordinator:</b>	<b>Prof. Nicolae Crisan, MD, PhD</b> <b>Prof. Bogdan Petrut, MD, PhD</b> <b>Assoc. Prof. Dan Vasile Stanca, MD, PhD</b> <b>Assoc. Prof. Dr. Florin Elec, MD, PhD</b>
<b>Department:</b>	<b>Surgical Specialties</b>
<b>Discipline:</b>	<b>Urology</b>
<b>Course code:</b>	<b>MED4107EN</b>

Semester	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	-	4	14	-	28	33	75	3	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Anatomy, Physiology, Pathophysiology, Surgical Semiology

### General objectives:

Knowledge and acquisition of notions concerning diagnosis, treatment and caring for the surgical and urological patient

### Specific objectives:

At the end of the course, the student must be able to:

- Obtain the case history and perform a correct and complete clinical examination of patients with urological pathology
- Formulate a clinical diagnosis (clinical interpretation) or the most likely clinical diagnoses
- Formulate a plan of investigations meant to confirm/ refute each suspected diagnosis
- Correlate clinical and complementary data for the formulation of the positive diagnosis/ diagnoses
- Formulate potential differential diagnoses and exclude/ confirm them using clinical/ laboratory elements
- Specify evolution possibilities and the prognosis of the diagnosed condition

- Formulate a therapy plan, mentioning the principles and means of treatment, in accordance with current guides and adapted to the patient's particularities
- Mention criteria of determining treatment effectiveness, as well as potential causes of failure and/or complications
- Correctly assess the conditions reflecting the patient's working capability and, if necessary, formulate a recovery plan
- Establish a follow-up plan

**Course content:**

1. Introduction to Urology, Urological semiology, Urological emergencies. Urological trauma. Chronic kidney disease
2. Prostate adenoma. Prostate cancer
3. Urothelial tumors
4. Urinary lithiasis. Penile tumors
5. Renal parenchyma tumors. Testicular tumors
6. Uropediatrics. Urinary incontinence. Neurological bladder
7. Urinary tract infections. Adrenal tumors. Benign pathology of external genital organs

**Practical activities:**

1. Particularities of case history and clinical examination in urology
2. Particularities of imaging and endoscopy in urology. Urinary catheterisation technique
3. Particularities of urological surgical interventions
4. Preoperative preparation in urology
5. Post-surgical monitoring after urological surgery
6. Emergency therapeutic manoeuvres
7. Monitoring and caring for emergency urological patients.

**References:**

1. <https://curs-urologie.ro/wp/>
2. Liviu Ghervan, Ciprian Lucan *Bazele Urologiei*, Ed. Med. Universitară "Iuliu Hațieganu" Cluj-Napoca 2007
3. Lawrence PF. *Chirurgie generală și specialități chirurgicale*. Crețu O, Jinga V, scripcariu V – coordonatorii ediției în limba română, Ed. A 6-a, Ed. Hipocrate, București, 2021
4. Vasile Dan Stanca *Urologie. Manual pentru lucrări practice*, Ed. Med. Universitară "Iuliu Hațieganu" Cluj-Napoca 2014
5. Mirali S, Seneviratne A (ed). *Toronto Notes 2020. 36th Edition*. Toronto Notes for Medical Students, Inc

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## ENDOCRINOLOGY. DIABETES AND NUTRITION RELATED DISEASES – 4 CREDITS

### A. ENDOCRINOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Endocrinology</b>
<b>Course coordinator:</b>	<b>Prof. Carmen Emanuela GEORGESCU, MD, PhD</b>
<b>Department:</b>	<b>Medical Specialties</b>
<b>Discipline:</b>	<b>Endocrinology</b>
<b>Course code:</b>	<b>MED4108EN</b>

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	3	-	14	-	21	15	50	2	Written + practical exam

L = lectures; PA = Practical Activities; CI = clinical internship

**Pre-requisites:** Semiology, Physiology, Pathophysiology

#### General objectives:

There are three general objectives in teaching clinical Endocrinology: **The informational core** which involves transmitting knowledge of clinical and paraclinical endocrinology. Moreover, acquiring certain **clinical abilities** specific to the field is also needed as they are to be used while examining patients, formulating a diagnostic, establishing a target for paraclinical explorations or while elaborating a therapeutical plan after a thorough examination of the patient. Beside these, students in Medicine have to develop **competences** in clinical diagnostic and monitoring of the chronic treatment of endocrine diseases and have to be able to put their acquired knowledge into practice.

#### Specific objectives:

- Knowing the principles in medical assistance of patients with endocrine disorders: diagnosis and treatment of endocrinopathies.
- Running into good clinical practice of hormone replacement therapy in pituitary, thyroid, adrenal and gonadal diseases.
- Establishing indications of investigation and management in primary care of most important endocrine diseases – myxedema, thyrotoxicosis,

hypocalcemia, chronic and acute adrenal insufficiency, postmenopause, osteoporosis.

**Course content:**

1. Classification of hormones. Feedback control of the endocrine systems
2. The hypothalamus: Functions of the endocrine hypothalamus. Physiologic puberty/Precocious puberty/Delayed puberty. Diabetes insipidus.
3. The pituitary gland: The pituitary tumoral syndrome. Acromegaly. Hyperprolactinemia and prolactinomas. Pituitary insufficiency in adults and children
4. The thyroid gland: Thyroid investigations. The nontoxic diffuse goiter and the nodular thyroid disease. Thyroid nodule and thyroid cancer. Hyperthyroidism. Hypothyroidism. Thyroiditis
5. The parathyroid glands: Hormones involved in the calcium regulation. Hyperparathyroidism{primary, secondary, tertiary}. Hypoparathyroidism. Pseudohypoparathyroidism. Osteoporosis
6. The adrenal glands: Chronic and acute adrenocortical insufficiency. Cushing's syndrome. Congenital adrenal hyperplasia:21-OH deficiency. Primary hyperaldosteronism and mineralocorticoid excess. Pheocromocytomas and paragangliomas
7. Reproductive endocrinology: Reproductive physiology-the ovary and testes. Ovarian insufficiency. Menopause. Polycystic ovary syndrome. Turner syndrome. Male hypogonadism. Klinefelter syndrome

**Practical activities:**

1. Endocrinology observation sheet (anamnesis, objective examination). Paraclinical diagnostic methods in endocrinology (hormonal, biochemical dosing, stimulation and inhibition tests, imaging explorations)
2. Pituitary tumor syndrome: imaging and ophthalmological exploration. Pituitary insufficiency: hormonal dosages (stimulation tests and their interpretation)
3. Gigantism / Acromegaly: hormonal dosages, imaging explorations. Clinical examination of the thyroid. Thyroid gland and nodule
4. Paraclinical examination of the thyroid (hormonal dosing, ultrasound, scintigraphy, aspiration cytological puncture). Hypothyroidism. Hyperthyroidism
5. Hypoparathyroidism and hyperparathyroidism. Osteoporosis (hormonal dosing, bone radiographs, DXA)
6. Paraclinical exploration of the cortico-adrenal (inhibition and stimulation tests, imaging). Adrenal cortical insufficiency. Cushing's syndrome
7. Morphological and functional exploration of the gonads (clinical examination, small basin ultrasound, hormonal dosing, spermogram, Barr corpus, karyotype).

**References:**

1. Ilie Ioana Rada. Introduction to Endocrinology. Springer Nature Switzerland AG, 2020 <https://www.springer.com/in/book/9783030273811>
2. Toronto notes 2020 (Ed 36)
3. Georgescu CE. *Principles of Clinical Endocrinology – A Manual for English Students*. Editura Medicala Universitara 2012
4. John Wass & Katharine Owen, *Oxford Handbook of Endocrinology and Diabetes*, 3rd Edition, Oxford University Press, 2014
5. Georgescu CE. *Îndreptar practic de endocrinologie*. Editura Medicală Universitară „Iuliu Hațieganu”, Cluj-Napoca 2013, ISBN 978-973-693-521-3
6. Duncea I (sub red.), Ghervan C, Georgescu C, Valea A, , Lencu C, Ilie I. *Endocrinologie*. Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca 2011, ISBN 978-973-693-430-8
7. Zbranca E (sub red.) *Endocrinologie-ghid de diagnostic si tratament in bolile endocrine*, Iasi-Editura Polirom, 2008
8. Duncea I. *Explorări paraclinice în bolile endocrine*, Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca 2000, ISBN 973-8019-30-3.

**Evaluation:** Common exam with Diabetes and Nutritious related diseases

- Written exam 60%
- Practical exam 40%

## B. DIABETES AND NUTRITION RELATED DISEASES

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Diabetes, Nutrition, Metabolic diseases</b>
<b>Course coordinator:</b>	<b>Prof. Gabriela Roman, MD, PhD</b>
<b>Department:</b>	<b>Medical specialties</b>
<b>Discipline:</b>	<b>Diabetes and Metabolic diseases</b>
<b>Course code:</b>	<b>MED 4108 EN</b>

Semester	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	1	1	-	14	14	-	24	52	2	Theoretical + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Physiology, Pathophysiology, Biochemistry, Semiology

### General objectives:

- Awareness of chronic non-communicable diseases – prevalence and health implications
- Introducing the concept of metabolic diseases and nutritional pathology: diabetes mellitus, obesity, metabolic syndrome, dyslipidemia, cardiovascular risk, hyperuricemia, healthy nutrition.
- Integrating metabolic diseases in global cardio-metabolic risk.

### Specific objectives:

At the end of the theoretical and practical module, students should know:

- To diagnose the hyperglycemic status (impaired fasting glycemia, impaired glucose tolerance, type 1 and type 2 diabetes, gestational diabetes);
- To collect relevant data on risk factors for type 2 diabetes and gestational diabetes in high risk population;
- To screen for type 2 diabetes and gestational diabetes in high risk population;
- To recognize and interpret the main signs and symptoms of hyperglycemia in diabetes;
- To diagnose the etiopathogenic types of diabetes (type 1, type 2, gestational diabetes, specific diabetes);
- To formulate recommendations for the clinical management of diabetes;

- To perform and explain to the patients the technical procedures to inject insulin;
- To recognize the side effects of antihyperglycemic drugs
- To monitor the efficacy of antihyperglycemic treatment by interpreting the HbA1c, glycemic profile and by using glucometers;
- To identify the therapeutic objectives and priorities for the different evolutive phases of type 1, type 2 and gestational diabetes;
- To make the differential diagnosis and to evaluate the severity of hyperglycemic crises (diabetic ketoacidosis and hyperglycemic hyperosmolar status)
- To implement the first aid for people with diabetic ketoacidosis and hyperglycemic hyperosmolar status;
- To make the differential diagnosis, to evaluate the severity of hypoglycemic crises and to give recommendations for prevention and treatment;
- To interpret the screening test and to diagnose the diabetes chronic microvascular complications (retinopathy, nephropathy, neuropathy);
- To elaborate a management plan for the patients with diabetes chronic microvascular complications: therapy, monitoring, therapeutic education, evaluation;
- To define the clinical and evolutive particularities of cardiovascular diseases in diabetes; ischemic heart disease, heart failure, cerebrovascular disease, peripheral obstructive arteriopathy;
- To screen and to stage the risk for foot ulcers/amputations in patients with diabetes;
- To formulate the diagnosis of dyslipidemia, according to the guidelines;
- To explain to the dyslipidemic patient the diagnostic and therapeutic options;
- To explain to the patient the antihyperlipidemic diet and the importance of physical activity;
- To identify the risk factors for the development of metabolic syndrome and obesity;
- To formulate the diagnosis, metabolic syndrome and obesity according to the guidelines;
- To analyze the health, social and economic impact that metabolic syndrome and obesity have in general population and to judge the importance of preventive strategies and early diagnosis;
- To settle a plan for the global clinic-biological assessment of the patients with obesity/metabolic syndrome;
- To structure/evaluate strategies for the clinical management of obesity/metabolic syndrome;
- To instruct the patients with obesity/metabolic syndrome for lifestyle optimization;

- To define cardiovascular risk factors and to calculate/interpret the cardiovascular risk according to specific score systems;
- To promote healthy lifestyle to high risk people for metabolic and cardiovascular diseases;
- To compose/explain the nutritional intervention in metabolic diseases (obesity, diabetes, dyslipidemia, hyperuricemia, hypertension);
- To formulate the concept of health and its determinant factors.

**Course content:**

1. Non-communicable chronic diseases: prevalence, health risk  
Metabolic diseases: epidemiology, medical, social, economic impact  
Diabetes mellitus: definition, classification, clinical managements
2. Diabetes : pathogenesis, clinical aspects, complication, clinical management
3. Diabetes : clinical management, co-morbidities, non-diabetic hypoglycemia
4. Obesity : definition, classification, risk factors, pathogenesis, clinical aspects, complications, clinical management
5. Dyslipidemia: definition, classification, risk factors, pathogenesis, clinical aspects, complications, clinical management
6. Metabolic syndrome and cardiovascular risk: definition, assessment, clinical management  
Evidence based medicine in metabolic diseases  
Hyperuricemia: definition, clinical and biochemical assessment, clinical management
7. Healthy lifestyle: optimal nutrition, physical activity, sleep  
Healthy nutrition and medical nutrition therapy: definition, principles.

**Practical activities:**

1. Chronic non-communicable diseases: prevalence of risk  
Metabolic diseases: epidemiology, medical, social, economic impact  
Diabetes: definition, classification, risk factors
2. Diabetes: pathogenesis, clinical appearance, complications, clinical management
3. Diabetes: clinical management, comorbidities  
Non-diabetic hypoglycemia
4. Obesity: definition, classification, risk factors, pathogenesis, clinical appearance, complications, clinical management
5. Dyslipidemia: definition, classification, risk factors, pathogenesis, clinical appearance, complications, clinical management
6. Metabolic syndrome and cardiovascular risk: definition, evaluation, clinical management  
Evidence-based medicine in metabolic diseases  
Hyperuricemia: definition, clinical and biochemical evaluation, clinical management

7. Healthy lifestyle: optimal nutrition, physical activity, sleep  
Healthy nutrition and nutritional medical therapy: definition, principles.

**Bibliography:**

1. Zamir Merali and Jason D. Woodfine (eds). *Essential Med Notes 32<sup>nd</sup> Edition*, Toronto Notes for Medical Students Inc., Toronto Ontario, Canada 2016
2. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc
3. Colectivul Disciplinei Diabet și Boli de Nutriție – Ghid de lucrări practice – Diabet zaharat, Nutriție, Boli Metabolice, Editura Medicală Universitară "Iuliu Hațieganu", 2018

**Optional supplementary bibliography:**

1. American Diabetes Association. Standards of Medical Care in Diabetes—2020. *Diabetes Care* 2020; 43 (Supplement 1). [https://care.diabetesjournals.org/content/43/Supplement\\_1](https://care.diabetesjournals.org/content/43/Supplement_1)
2. CVD Prevention in Clinical Practice (European Guidelines on). 2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts). *Eur Heart J* (2016) 37 (29): 2315-2381
3. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. *European Heart Journal* (2019) 00, 1-78.
4. European Guidelines for Obesity Management in Adults. *Obes Facts* 2015;8:402-424

**Evaluation:** Combined Exam Diabetes and Endocrinology

- Theoretical written exam 60%
- Practical exam 40%

## RADIOLOGY AND MEDICAL IMAGING – 5 CREDITS

- RADIOLOGY. MUSCULOSKELETAL AND GENITOURINARY SYSTEMS; EMERGENCIES.
- MEDICAL IMAGING

### A. RADIOLOGY. LOCOMOTOR, EXCRETORY AND EMERGENCY APPARATUS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Radiology. Musculoskeletal and genitourinary systems; emergencies  
**Course coordinator:** Prof. Dudea Sorin, MD, PhD,  
 Assoc. Prof. Manuela Lenghel MD, PhD  
**Department:** Surgical Specialties  
**Discipline:** Radiology  
**Course code:** MED4209EN

Semester	Courses type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	1,5	1,5	-	21	21	-	42	84	5*	Written + oral exam

L = lectures; PA = practical activities; CI = clinical internship

\*with Medical Imaging

**Pre-requisites:** -

#### General objectives:

- To learn the physical background of conventional and imaging techniques (X-ray physics, physics of ultrasound, MRI physics), biological effects of radiation and the principles of professional and general radiation protection.
- To acquire the basic notions of semiology that apply to each examination technique (conventional and imaging) with the explanation of the basic concepts of image acquisition.
- To know the indications and contraindications of each examination technique as well as the algorithms of examination in order to reduce exposure to radiation. To correlate common and/or specific abnormal imaging findings with organ pathology and disease.

**Specific objectives:**

- Recognition of the imaging method
- Recognition of the normal anatomical elements and of the variants
- Recognition of the semiology elements and their signification
- Recognition of the pathological findings
- Discussion of the positive and differential diagnosis
- Elaborating a radiological report.

**Course content:**

1. Elementary notions of physics and technique: The structure of the atom; Electromagnetic and corpuscular radiation: classification, properties; X-rays: mechanisms of production, properties, interaction with matter; X-ray tube: structure of a radiology device, conventional radiological examination techniques (fluoroscopy, radiography, special techniques and angiography).
2. Elements of physics and technique of imaging equipment: conventional radiological image (radiography and fluoroscopy), digital image; Ultrasound: physics, basic notions; Computed tomography: physics, basic notions; Magnetic resonance imaging: physics, basic notions; the examination plan of a radiological image.
3. Radiobiology: Natural and artificial irradiation; Biological effects of ionizing radiations; Acute irradiation disease: general notions.
4. Radioprotection notions: Notions of radiation measurement; Useful and unnecessary irradiation; Main nations of general and professional radioprotection; legislation.
5. Genitourinary system: Examination technique (KUB, ultrasound, CT). Normal radiological anatomy. Syndromes: small kidney, large kidney, renal mass, obstruction, stones, malformation.
6. The breast: imaging techniques, main disease, BIRADS, interventional.
7. The retroperitoneum and pelvis: imaging of the adrenals, lymph nodes, bladder, genitals.
8. Musculoskeletal system: examination technique (radiography, ultrasound, CT, MR); Radio-imaging anatomy; Elementary semiology of the musculoskeletal system pathology.
9. Elementary notions of infectious and tumor disease of the musculoskeletal system.
10. Elementary notions of the inflammatory joint disease. Degenerative processes of the musculoskeletal system.
11. Imaging in pediatrics: musculoskeletal, genitourinary and digestive tract specific disease.
12. Emergencies: imaging of traumatic and nontraumatic emergencies of the musculoskeletal and genitourinary systems.

13. Rehearsal and integration through algorithms of the indications of the imaging techniques.

**Practical activities:**

1. Basic notions of physics and radiological technique - definitions, terms, elements of semiology
2. Excretory apparatus - Examination techniques (IVU, ultrasound, scanner, MRI). Normal radiological anatomy. Syndromes: small kidney, large kidney, renal mass, obstruction, lithiasis, malformations.
3. Imaging exploration in the pathology of retroperitoneal and small pelvis organs (adrenal glands, lymphadenopathies). Radiological exploration of the bladder. Radiological exploration of the internal genital organs
4. Musculoskeletal system - examination techniques (X-ray, ultrasound, CT, MRI). Radiologic anatomy, basic radiological semiology in the pathology of the musculoskeletal system
5. Basic radiological images in infectious, inflammatory, degenerative and tumoral pathology of the locomotor system. Child-specific locomotor pathology (rickets, DDS)
6. Basic radiological aspects of medico-surgical emergencies (abdomen and pelvis: trauma, acute abdomen, extremities: trauma, vascular emergencies, herniated disc, foreign bodies).

**References:**

1. Ducea S.M. (sub red.) Radiologie. Vol. I. Ed. Med. Univ. Iuliu Hatieganu, Cluj-Napoca, 2017.
2. Sutton D. Textbook of radiology and imaging, Ed. Churchill Livingstone 7<sup>th</sup> edition, 2003

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## B. MEDICAL IMAGING

<b>Field of study:</b>	<b>Health</b>
<b>Study Program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Medical Imaging –Digestive tract</b>
<b>Course coordinator:</b>	<b>Lecturer Mihai Socaciu, MD, PhD</b>
<b>Department:</b>	<b>Surgical Specialties</b>
<b>Discipline:</b>	<b>Medical Imaging</b>
<b>Course code:</b>	<b>MED4209EN</b>

Semester	Course Type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credits	Evaluation	
		hours/week			hours/semester									
		L	PA	CI	L	PA	CI							
II	Compulsory	2	2	-	14	14	-		22	50	5*	Written + practical exam		

L = lectures; PA = practical activities; CI = clinical internship  
\*with Radiology

**Pre-requisites:** Useful prerequisites are knowledge in Medical Semiology and General Morphopathology

### General objectives:

At the end of the course the students will be able to correctly achieve the therapeutic management of the patients with digestive pathology in relation to the taught techniques.

### Specific objectives:

At the end of the course, students will be able to:

- To know the main imaging techniques used in medical practice (centered on pathology of the abdomen, especially the digestive tract and the accessory organs)
- To know their indications and limits
- To know the risks to which patients are subjected when performing specific procedures
- To know the clinical criteria on the basis of which diagnostic procedures involving images will be indicated
- To know criteria and ways of selecting the diagnostic method in relation to the specifics and severity of the disease
- To know how to combine imaging methods to get the right diagnosis

- To know the importance of using imaging methods in the follow-up of chronic diseases and in detecting the acute relapses.
- To know the patient's preparation necessary to obtain optimal images and the supplies needed to reach the proposed goal

**Course content:**

1. Conventional radiology of the digestive tract. Techniques and procedures. Clinical-imaging applications.
2. Ultrasonography of the liver and biliary system. Examination protocol. Normal aspect. Ultrasonographic semiology. Diffuse liver diseases. Portal hypertension. Liver tumors. Liver abscess. Biliary lithiasis. Acute cholecystitis. Cholestatic syndromes. Other biliary diseases (tumors, cholecystoses)
3. Pancreatic ultrasonography. Normal aspect. Acute pancreatitis. Chronic pancreatitis. Pancreatic tumors. Ultrasonography of the digestive tract and peritoneal serosa. Normal aspect. Tumoral vs inflammatory model. Digestive emergencies. Peritoneal ultrasonography. Normal aspect. Diffuse and circumscribed collections. Ascitis.
4. Computed tomography (CT) in the abdominal pathology. Normal aspect. Examination protocols. Pathology of the liver, biliary system, pancreas, digestive tract and peritoneum.
5. Magnetic resonance imaging (MRI) in the abdominal pathology. Examination protocols. Normal aspect. Liver pathology (diffuse liver diseases, tumors), biliary pathology (cholestasis, tumors), pancreatic pathology (inflammation, tumors), tumoral and inflammatory pathology (fistula, abscesses) of the rectum.
6. Nuclear medicine. Generalities: radioisotopes, scintigraphy exploration equipment, image formation, acquisition techniques.
7. Nuclear medicine. Applications in abdominal pathology: exploration of the digestive tract and accessory organs – scintigraphy in hepato-splenic, salivary, esophageal diseases, tumors, exploration of GI tract bleeding and Meckel diverticula. Applications in renal and musculo-skeletal diseases.

**References:**

**Mandatory bibliography:**

1. Badea R, Andries G, Branda H, Vasile T, Lupșor M, Chirilă A, Caraiani C. Imagistica Medicală a Tubului Digestiv și a Glandelor Anexe. Note de curs pentru Programul de studiu “Medicină Generală”, an IV (format electronic), 2010, Cluj Napoca
2. Colectivul Disciplinei Imagistică. "Imagistica Medicală a Tubului Digestiv și a Glandelor Anexe. Note de curs pentru Programul de studiu “Medicină Generală”, an IV

**Supplementary bibliography:**

1. Chen MYM, Pope TL, Ott DJ. Basic Radiology, Second Edition: McGraw-Hill Education; 2010.
2. Mettler FA. Essentials of Radiology: Elsevier Saunders; 2005.
3. Gunderman RB. Essential Radiology: Clinical Presentation Pathophysiology Imaging: Thieme; 2014.
4. Brant WE, Helms CA. Fundamentals of Diagnostic Radiology: Wolters Kluwer/Lippincott Williams & Wilkins; 2012.
5. Harisinghani MG, Mueller PR. Teaching Atlas of Abdominal Imaging: Thieme; 2011.
6. Block B, Telger TC. Abdominal Ultrasound: Step by Step: Thieme; 2015.
7. Prokop M, Galanski M, Van der Molen A. Spiral and Multislice Computed Tomography of the Body: Thieme; 2003.
8. Sutton D (editor). Textbook of Radiology and Imaging. Vol 1. 7th Edition. Churchill Livingstone 2003.
9. European Association of Nuclear Medicine [www.eanm.org/guidelines](http://www.eanm.org/guidelines)

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## OCCUPATIONAL MEDICINE AND OCCUPATIONAL DISEASES

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Occupational Medicine  
**Course coordinator:** Lecturer Armand Râjnoveanu, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Occupational Medicine  
**Course code:** MED4210EN

Semester	Courses Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	1	2	-	14	28	-	38	80	3	Written+ practical exam

L = lectures; PA = practical activities; CI = clinical internship.

### Pre-requisites:

- Semiology, Biochemistry, Biophysics, Anatomy, Pathological Anatomy, Physiology, Pathophysiology, Microbiology

### General objectives:

- to identify the suspicion of an occupational disease which is a legal obligation for all medical doctors, no matter their specialty and workplace.
- to know and apply the methodology for reporting an occupational disease.
- to identify based on occupational history the occupational risk factors which may be involved in the etiology of work-related diseases.
- to know some diagnostic, treatment, and prophylaxis for the most important occupational disorders.

### Specific objectives:

At the end of the training the students will be able to:

- to take occupational history and perform medical physical examination in patients with occupational and work-related disease
- to formulate at the first stage the clinical diagnosis (clinical interpretation) or the most likely clinical diagnoses.
- to formulate an appropriate exploration plan to confirm/refute each diagnosis he has suspected.
- integrate clinical data with those of complementary explorations for the formulation of positive diagnosis (positive diagnoses).

- to formulate any differential diagnoses and to exclude / confirm with the help of clinical / laboratory elements these diagnoses.
- to specify what are the evolutionary possibilities and the prognosis of the diagnosed condition.
- to formulate a therapeutic plan, specifying the principles and means of treatment, in accordance with current guidelines and adapted to the patient's particularities.
- specify the criteria for monitoring the effectiveness of treatment, as well as possible causes of failure and/or complications.
- to assess correctly the conditions reflecting the patient's ability to work and, to the extent necessary, to formulate a recovery plan.
- establish, where appropriate, a dispensation plan.

**Course content:**

Course 1. Occupational medicine. Occupational health. Occupational disease. Work-related illness.

Course 2. Work-related bronchial asthma. Hypersensitivity pneumonitis

Course 3. Pneumoconiosis. Silicosis. Coal worker pneumoconiosis. Asbestosis and the carcinogenic effects of exposure to asbestos.

Course 4. General occupational toxicology. Occupational poisoning with metals and metalloids.

Course 5. Occupational poisoning with organic solvents: group effects. Professional asphyxiants: carbon monoxide and cyanide compounds.

Course 6. Occupational musculoskeletal disorders.

Course 7. Occupational disorders induced by physical hazards (extreme heat, noise, vibration).

**Practical activities:**

LP 1. The general duties of the occupational health service in accordance with Convention 161 of the International Labour Organization. Notions of selection and professional orientation, the examination for employment, adaptation of new employees and periodical medical examination.

LP 2. Diagnosis of occupational disease: diagnosis criteria, reporting, research, declaration, and record of occupational diseases. Methodology of research of working conditions and assessment of occupational risks.

LP 3. Methodological criteria for sampling and interpretation of analysis reports for physical, physico-chemical, and chemical factors at a workplace.

LP 4. The technique of monitoring respiratory function in personnel at risk of chronic obstructive pulmonary disease. Standard pulmonary function testing, small airways investigation, VEMS decline rate, bronchial provocation tests.

LP 5. Diagnosis of a case of occupational or work-aggravated asthma by working conditions, professional or professional-related chronic obstructive pulmonary disease.

LP 6. Cardiovascular functional tests, their application in the field of occupational medicine: Teslenko, Crampton and Brouha test.

LP 7. Interpretation of a standard chest X-ray for the diagnosis of pneumoconiosis, according to the International Classification ILO 2011.

LP 8. Diagnosis of a case of silicosis, asbestosis, anthracosis, siderosis.

LP 9. Making and interpreting an audiogram. Cold challenge test for Raynaud syndrome testing. Allergological skin tests.

LP 10. Diagnosis, treatment, and prophylaxis of a case of noise induced hearing loss/ deafness. Diagnosis of a case of occupational Raynaud's syndrome and occupational dermatitis.

LP 11. Professional cancer: nuisances, trades, technological processes.

LP 12. Diagnosis of a case of professional metal poisoning, professional intoxication with organic solvents.

LP 13. Diagnosis of a professional or professional-related case of osteo-musculoskeletal-articular disease.

LP 14. Recapitulative meeting, verification of practical knowledge.

### References:

1. Baxter P (Ed.), Aw TC (Ed.), Cockcroft A (Ed.), Durrington P (Ed.), Harrington J (Ed.). (2010). Hunter's Diseases of Occupations. London: CRC Press.

2. LaDou, Joseph. Current Occupational & Environmental Medicine: Fourth Edition. US: McGraw-Hill Medical, 2006.

3. Manu P, Niculescu T. Practica Medicinii Muncii, Ed. Medicală, Bucuresti, 1978.

4. Hotărârea de Guvern Nr. 1169/2011 pentru modificarea și completarea Hotărârii de Guvern Nr. 355/2007 privind supravegherea sănătății lucrătorilor.

5. Toma I. Practica Medicinii Muncii, Sitech, Craiova, 2006.

6. ILO. Guidelines for the use of the ILO International Classification of Radiographs of Pneumoconiosis. Revised edition 2011. Geneva, International Labour Office, 2011

7. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc

### Evaluation:

- Written exam        60%
- Practical exam      40%

## SURGERY – 12 CREDITS

- GENERAL SURGERY
- ONCOLOGIC SURGERY
- CARDIOVASCULAR SURGERY
- THORACIC SURGERY
- PLASTIC SURGERY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** General Surgery  
**Course coordinator:** Professor Ph.D. Puia Ion Cosmin - Surgery III  
 Associate Professor Ph.D. Graur Florin - Surgery III  
 Associate Professor Ph.D. Ionescu Călin - Surgery V  
 Professor Ph.D. Adrian Molnar - Cardiovascular surgery  
 Professor Ph.D. Emanuel Palade - Thoracic surgery  
**Department:** Surgery, Oncology  
**Discipline:** Surgery Clinic I, III, V, Oncologic Surgery, Cardiovascular Surgery, Thoracic Surgery, Plastic Surgery  
**Course code:** MED4211EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	12	-	24	84	-	168	100	352	12	Written+ practical exam

L =lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Anatomy, Physiology, General Morphopathology, General surgery

### General objectives:

Application and practice of basic knowledge and basic practical skills in acute and chronic surgical pathology of the digestive organs

### Specific objectives:

- Learning and practicing the general clinical exam in patients from the outpatient department of general surgery or hospitalized with pathologies

of the esophagus, stomach, small intestine, large intestine, liver, biliary ducts and pancreas.

- Learning the principles and practicing the basic methods of preventing nosocomial diseases and promoting health in patients admitted to the general surgery department.
- Learning and practicing, on simulators and in a relevant clinical context, the main clinical maneuvers, laboratory and diagnostic procedures.
- Learning the basic principles and practicing verbal and written communication with patients, medical staff and administration.
- Practicing clinical reasoning and decision making.
- Learning the basic principles and providing first aid in the most important medical-surgical emergencies, in simulated situations and in the outpatient surgical clinic.
- Formulation of therapeutic prescriptions for patients undergoing surgery.
- Development of managerial skills, critical evaluation of data (Evidence Based Medicine) and efficient use of resources.
- Learning and practicing in simulated conditions some elements of legislation and professional ethics.

**Course content:**

1. Clinical examination and surgical pathology of the esophagus  
Surgical anatomy and physiology  
Esophageal diverticula and achalasia  
Hiatal hernia
2. Clinical exam and surgical pathology of the esophagus  
Esophageal cancer  
Corrosive esophagitis and postcaustic esophageal stenoses  
Dysphagia / Gastroesophageal reflux disease
3. Clinical exam and surgical pathology of the stomach  
Complications of the gastroduodenal ulcer  
Benign and malignant tumors of the stomach  
SDH / Hematemesis and melena
4. Clinical exam and surgical pathology of the liver  
Surgical anatomy and physiology  
Liver abscess  
Benign and malignant liver tumors
5. Clinical exam and surgical pathology of the liver  
Hepatic hydatid cyst  
Surgical treatment in portal hypertension  
Abdominal tumors
6. Clinical exam and surgical pathology of the biliary ducts  
Surgical anatomy and physiology

- Complications of gallstones, cholecystitis, acute colangitis, common bile duct stones, biliary-digestive fistulas
- Biliary ducts cancer / treatment principles
- Obstructive jaundice
- 7. Clinical exam and surgical pathology of the spleen
  - Surgical anatomy and physiology
  - Indications for splenectomy
- 8. Clinical exam and surgical pathology of the pancreas
  - Surgical anatomy and physiology
  - Surgical indications in acute pancreatitis
  - Chronic pancreatitis
  - Pancreatic tumors
- 9. Clinical exam and surgical pathology of the small intestine
  - Surgical anatomy and physiology
  - Benign and malignant tumors
  - Meckel's diverticulum
  - Crohn's disease / intestinal anastomoses / mechanical suture
  - Intestinal sutures
- 10. Clinical exam and surgical pathology of the appendix
  - Surgical anatomy and physiology
  - Acute appendicitis
  - Appendicular cancer
- 11. Clinical exam and surgical pathology of the colon
  - Surgical anatomy and physiology of the colon
  - Benign and malignant tumors of the colon
  - Colic diverticulosis
  - Ulcerative colitis
  - Indications for stoma in digestive surgery / Stomatherapy
- 12. Clinical exam and surgical pathology of the rectum and anus
  - Surgical anatomy and physiology
  - Hemorrhoids, perianorectal disease, perianorectal fistulas and abscesses, anal fissure, anal prolapse
  - Anorectal cancer
  - Anal incontinence
  - Anal pain and rectal bleeding
- 13. Clinical exam and treatment of abdominal emergencies
  - Surgical anatomy and physiology
  - Clinical exam in acute surgical abdomen
  - Paraclinical examinations in acute surgical abdomen
- 14. Clinical exam and treatment of abdominal emergencies
  - Digestive hemorrhage
  - Abdominal injuries

## SUBMODULES:

### CARDIOVASCULAR SURGERY

1. Introduction in cardiovascular surgery
2. Ischemic heart disease
3. Pathology of the aortic valve, chronic aneurysms of the ascending aorta
4. Pathology of the mitral and tricuspid valve
5. Pulmonary embolism. Pericarditis
6. Peripheral arterial disease, thoracic and abdominal aortic aneurysms, acute aortic dissection
7. Congenital heart disease.

### THORACIC SURGERY:

Thoracic surgical pathology (7 hours)

1. General aspects in thoracic surgical pathology (diagnosis, therapeutic decision, indications and surgical techniques, postoperative follow-up, particularities)
2. Pleural diseases with pneumothorax and malignant pleural effusion in depth
3. Infectious diseases with the pleural empyema in depth
4. Thoracic tumor diseases with malignant lung tumors in depth

### **Practical activities:**

1. Scheme for presenting a surgical clinical case
2. Clinical exam and paraclinical examinations in surgical pathology of the esophagus
3. Surgical treatment of surgical pathology of the esophagus
4. Clinical exam and paraclinical examinations of surgical pathology of the stomach and duodenum
5. Surgical treatment of surgical pathology of the stomach and duodenum
6. Clinical exam and paraclinical examinations of surgical pathology of the small intestine
7. Surgical treatment of surgical pathology of the small intestine
8. Clinical exam and paraclinical examinations in surgical pathology of the appendix
9. Surgical treatment of surgical pathology of the appendix
10. Clinical exam and paraclinical examinations of surgical pathology of the colon
11. Surgical treatment of surgical pathology of the colon
12. Clinical exam and paraclinical examinations of surgical pathology of the rectum and anus
13. Surgical treatment of surgical pathology of the rectum and anus
14. Clinical exam and paraclinical examinations of the liver diseases
15. Surgical treatment of liver diseases
16. Clinical exam and paraclinical examinations of biliary ducts surgery
17. Surgical treatment of surgical pathology of the biliary ducts

18. Clinical exam and paraclinical examinations of surgical conditions of the pancreas
19. Surgical treatment of surgical pathology of the pancreas
20. Clinical exam and paraclinical examinations of surgical pathology of the spleen
21. Surgical treatment of surgical pathology of the spleen
22. Clinical exam and paraclinical examinations in acute surgical abdomen
23. Principles of treatment in acute surgical abdomen
24. Surgical sutures, mechanical sutures
25. Stoma: indications, stomatherapy
26. Digestive anastomoses
27. Instruments in open digestive surgery
28. Medical equipment used in digestive surgery
29. Notions of enteral and parenteral nutrition
30. Instruments in laparoscopic surgery
31. Clinical case presentations
32. Video demonstrations
33. Clinical scenarios
34. Structured Objective Examination (OSCE) Simulation I  
Structured Objective Examination (OSCE) Simulation II

**8.2.2. During the clinical internship, in addition to the activities carried out in the patient rooms and in the paraclinical examination offices, students will also participate in other activities such as:**

- diagnostic / therapeutic activities;
- practical demonstrations of diagnostic examinations;
- weekly oral presentation of a special clinical case - followed by discussion based on the case;
- advances in the field of general surgery – special literature;
- interactive collective exercises for clinical reasoning and therapeutic strategy learning

**References:**

1. Essentials of General Surgery. Peter F Lawrence Ed., Wolters Kluwer Health/ Lippincott Williams and Wilkins, Fifth Edition, Baltimore, 2013;
2. Essentials of General Surgery And Surgical Specialities, [Peter Lawrence](#), Editura Wolters Kluwer Health, Editia VI-a, 2019 (tematică rezidențiat)
3. Operationsatlas Chirurgie (Deutsch) Gebundene Ausgabe, von [Volker Schumpelick](#) –2013
4. Nadim Al Hajjar. Patologie chirurgicală digestivă. Editura Medicală Universitară “Iuliu Hațieganu”, Cluj-Napoca, 2021
5. Tratatul National de Chirurgie sub redactia Irinel Popescu, Ed. Academica, 2015



## CRANIO AND MAXILLOFACIAL SURGERY

<b>Field of Study</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course title</b>	<b>Maxillofacial surgery</b>
<b>Course coordinator</b>	<b>Assoc.Prof. Onisor Florin, MD, PhD</b>
<b>Department</b>	<b>Dental Medicine Department of Cranio-Maxillofacial Surgery and Dental Emergencies</b>
<b>Discipline</b>	<b>Maxillofacial Surgery</b>
<b>Course code</b>	<b>MED 4 2 12 EN</b>

Semester	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/semester						
		L	PA	CI	L	PA	CI				
II	Compulsory	1	1	-	14	14	-	22	50	2	Written exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** General and special anatomy - of the head and neck. Physiology. Pathophysiology. Semiologie

### General objectives:

The course provides 4<sup>th</sup> year students in General Medicine of the Faculty of Medicine the theoretical concepts related to the oral and maxillofacial pathology.

The practical assignments aim at acquiring practical skills necessary for establishing diagnosis and therapeutic modalities applicable in oral and maxillofacial pathology.

### Specific objectives:

Acquiring knowledge about the field of oral and maxillofacial pathology.

Acquiring the skills needed to establish diagnosis and therapeutic methods applicable in oral and maxillofacial pathology.

### Course content:

1. The specificities of objective examination in maxillofacial surgery. Pathology of dental eruption.
2. Dental and maxillofacial traumas: wounds of orofacial soft tissues; dental and periodontal traumas; facial skeleton fractures; multiple traumas.
3. Oro-maxillofacial infections: perimaxillary soft tissue infections, superficial and deep abscesses; nonspecific and specific infections of maxillary bones.

4. Pathology of dental origin of the maxillary sinus. Etiopathogeny, clinical signs, diagnosis and treatment.
5. Benign tumors of the soft and hard tissues on the maxillofacial territory. Clinical, therapeutic conduct. Malignant tumors of the maxillofacial soft and hard tissue. Clinical appearance, therapeutic conduct.
6. Salivary glands pathology. Research methods of salivary glands. Wounds and fistulae of salivary glands. Sialolithiasis. Salivary gland tumors. Sialosis.
7. Cranium and maxillofacial malformations. TMJ pathology and trigeminal neuralgia.

**Practical activities:**

1. Practical demonstrations of the particularity of the loco-regional clinical examination in maxillofacial surgery. Pathology of dental eruption. Clinical examination, diagnosis and treatment.
2. Tooth-maxillofacial trauma. Clinical appearance, diagnosis, emergency treatment and final treatment. Management of polytrauma.
3. Oro-maxillofacial infections. Etiopathogenesis, clinical appearance, diagnosis, emergency and curative treatment. Pathology of dental origin of the maxillary sinus. Diagnosis and treatment.
4. Benign tumors of the soft and hard parts of the maxillofacial territory: the cysts of the jaw and of the cervico-facial soft parts, the papilloma of the buccal mucosa, the epithelio-conjunctival hyperplasia, the granuloma of the pregnant woman, the epulis, the hemangioma, the osteoma, the fibrosomal dysplasia, the adamantoma, the adamantoma
5. Malignant tumors of the soft and hard parts of the maxillofacial territory: the peculiarities of the onset forms of the oro-facial cancer; middle-stage cancer of the face; mandible carcinomas; jaw sarcomas; the dental care of the patient to be irradiated antitumor
6. Pathology of the salivary glands. Clinical appearance, diagnosis and treatment. Cranio-maxillofacial malformations. Clinical appearance, diagnosis and therapeutic principles
7. Pathology of the temporo-mandibular joint: diagnosis, treatment. Trigeminal neuralgia: clinical forms, diagnosis, treatment.

**References:**

- Burlibasa Corneliu, CHIRURGIE ORALA SI MAXILOFACIALA, Editura Medicala, Bucuresti, 1999;
- Alexandru Rotaru, Grigore Baciut, Horatiu Rotaru, CHIRURGIE MAXILOFACIALA, Vol. I si Vol. II, Editura Medicala Universitara "Iuliu Hatieganu" Cluj- Napoca, 2003.
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- Barthélémy Isabelle, et al. Chirurgie maxillo-faciale et stomatologie: Réussir les ECNi. Elsevier Health Sciences, 2017.
- Loré JM, Medina JE. An Atlas of Head and Neck Surgery, Elsevier, 2009.
- Hupp JR, Ellis E, Tucker MR. Contemporary Oral and Maxillofacial Surgery, 7th Edition, Elsevier, 2018
- Robert Reti, Damian Findlay, Oral Board Review for Oral and Maxillofacial Surgery, Springer, 2021
- Mark R. StevensShohreh GhasemiReza Tabrizi, Innovative Perspectives in Oral and Maxillofacial Surgery, Springer, 2021
- Harald Eufinger, Alexander Kübler, Henning Schliephake, Mund-, Kiefer- und Gesichtschirurgie, Springer, 2021
- Ingrid Rozylo-Kalinowska, Kaan Orhan, Imaging of the Temporomandibular Joint, Springer, 2019
- S. Thaddeus Connelly, Gianluca Martino Tartaglia, Rebeka G. Silva, Contemporary Management of Temporomandibular Disorders, Springer, 2019
- Henrik Hellquist, Alena Skalova, Histopathology of the Salivary Glands, Springer, 2014
- Moni Abraham Kuriakose, Contemporary Oral Oncology - Diagnosis and Management, Springer, 2017
- Tadaaki Kirita, Ken Omura, Oral Cancer - Diagnosis and Therapy, Springer, 2015
- Elie M. Ferneini, Michael T. Goupil, Office-Based Maxillofacial Surgical Procedures, Springer, 2019

**Evaluation:**

- Written test            100%

## ORTHOPAEDICS – 3 CREDITS

### ORTHOPAEDICS – TRAUMATOLOGY PEDIATRICS ORTHOPAEDICS

<b>Field of study:</b>	<b>Health</b>
<b>Study programme:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Orthopedics and traumatology</b>
<b>Course coordinator:</b>	<b>Assoc. Prof. Adrian Todor MD, PhD</b>
<b>Department:</b>	<b>Surgical specialties</b>
<b>Discipline:</b>	<b>Orthopaedic-Traumatology and Pediatric Orthopaedics</b>
<b>Course code:</b>	<b>MED4213EN</b>

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	4	6	-	21	35	-	26	82	3	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Anatomy, Medical Imaging, General Surgery

#### General objectives:

- Acquiring fundamental theoretical and practical notions related to the pathology of the locomotor apparatus
- Knowledge and understanding of the principles and methods of orthopedic and surgical treatment of diseases of the locomotor system
- Familiarizing with the child's most common orthopedic disorders; early recognition of specific conditions, for timely routing to a specialist.
- Acquiring therapeutic algorithms in the main orthopedic disorders of pediatric patients.

#### Specific objectives:

- The particularities of the objective examination in osteo-articular traumatology
- Emergency therapy in resolving osteo-articular traumas (fractures, sprains, sprains, politraumatisms)

- Diagnosis and treatment of the patient with traumatic or chronic diseases of the osteo-articular system, as well as methods for preventing and combating their complications
- Acquiring the knowledge necessary for early detection of complications that may occur under the gypsum apparatus and treatment modalities
- Therapeutic principles of open fractures and multiple fractured patients
- Principles of surgical treatment and osteosynthesis methods used in the treatment of fractures
- Knowledge of the infectious and tumor pathology of the locomotor apparatus and principles of treatment
- Knowing modern methods of investigation and their usefulness in the diagnosis of osteo-articular diseases

### **Course content:**

#### **Orthopaedics – Traumatology**

1. Introduction
2. General notions of osteo-articular anatomy and physiology
3. General notions of osteo-articular traumatology: fracture, sprains, joint wounds, compartment syndrome
4. Traumatology of scapular belt and arm: the fractures of the clavicle, shoulder fractures, acromio-clavicular dislocation, scapular-humeral dislocation, fractures of the proximal end of the humerus, fractures of the humeral diaphysis, fractures of the distal humerus
5. Elbow, forearm and hand traumatology: elbow elbows, olecranon fractures, radial head fractures, the fracture of the bones of the forearm, the forearm fracture-dislocation (Monteggia-Stanculescu), fractures of the distal extremity of the radius
6. Traumatology of spine and pelvis: traumatology of the spine, traumatology of the pelvis
7. Hip and thigh traumatology: traumatic hip dislocation, fractures of the femoral neck, pertrochanteric fractures, femoral diaphysis fractures
8. Traumatology of the knee, leg and leg: fractures of the distal extremity of the femur, patella fractures, fractures of the proximal tibia, the fractures of the calf bones, malleolar fractures
9. Bone tumors and infections of the osteo-articular apparatus: benign bone tumors, malignant, primary and secondary bone tumors, acute and chronic osteomyelitis
10. Arthrosis: hip osteoarthritis, knee osteoarthritis

#### **Pediatrics Orthopaedics**

1. Morphofunctional particularities of the musculoskeletal system in children.
2. Musculoskeletal trauma in children: fractures- generalities, obstetrical fractures, fractures of the upper limb, fractures of the lower limb.

- 3.The Volkmann syndrome, the nursemaid's elbow, the physically abused child.
- 4.Congenital malformations: congenital malformations of the upper limb, congenital malformations of the lower limb, congenital idiopathic talipes equinovarus (congenital clubfoot), developmental dysplasia of the hip.
- 5.The congenital muscular torticollis.
- 6.The juvenile osteochondroses.
- 7.Utilization and maintenance of plasters casts and external fixation devices.
- 8.Prostheses, orthoses and other support devices (including their utilization).

**Practical activities:**

1. providing first aid and transporting the patient with traumatic osteo-articular disorders
2. maneuvers to reduce fractures and dislocations
3. gypsum immobilization
4. how to make and apply gypsum appliances
5. temporary assets (continuous traction)
6. special fixed assets (bandages, plaster appliances, braces)
7. presentation of implants used in orthopedics and osteo-articular trauma
7. presentations and discussions of clinical cases
8. prevention and treatment of post-immobilization complications
9. imaging methods used in locomotor system disorders
10. video presentations with a surgical resolution of fractures
11. traumas of the locomotor system in children: diagnosis, complications, orthopedic and surgical treatment
12. idiopathic varus-equin congenital crooked leg: diagnosis, classification, treatment
13. hip developmental dysplasia.
14. orthoses, prostheses and gypsum immobilization used in Pediatric Orthopedics.

**References:**

1. Lectures - handouts/electronic format
2. Tomoaia G., Traumatologie osteoarticulară, Editura Medicală Universitară "Iuliu Hațieganu", Cluj-Napoca, 2017
3. Tomoaia G., Ortopedie, Editura Medicală Universitară "Iuliu Hațieganu", Cluj-Napoca, 2013
4. Vasilescu D., Ortopedie pediatrică, Ed. Medicală Univ. "Iuliu Hațieganu", Cluj -Napoca, 2003
5. Tomoaia G., Caiet de lucrări practice de ortopedie-traumatologie, Ed. Medicală Universitară "Iuliu Hațieganu", Cluj-Napoca, 2014
6. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc

7. Lawrence PF. Chirurgie generală și specialități chirurgicale. Crețu O, Jinga V, scripcariu V – coordonatorii ediției în limba română, Ed. A 6-a, Ed. Hipocrate, București, 2021 (pag. 585-633).

**Evaluation:**

- Theoretical exam 60%
- Practical exam 40%

## 5<sup>th</sup> YEAR

### INTERNAL MEDICINE II. CARDIOLOGY. PNEUMOLOGY – 14 CREDITS

#### A. INTERNAL MEDICINE II.

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Internal Medicine – Cardiology</b>
<b>Course coordinator:</b>	<b>Lecturer Gabriel Guşetu, MD, PhD</b>
<b>Department:</b>	<b>Internal Medicine</b>
<b>Discipline:</b>	<b>Cardiology – Rehabilitation</b>
<b>Course code:</b>	<b>MED5101EN</b>

Semester	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	8	-	14	56	-	106	138	300	6	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

#### Pre-requisites:

- Anatomy, Physiology, Pathophysiology, Pharmacology, Medical Research Methodology

#### General objectives:

At the end of the course, students will be able to correctly carry out the therapeutic management of patients with the main cardiovascular and respiratory diseases

#### Specific objectives:

At the end of the course students will be able:

- to list some of the etiological causes for the cardiovascular and respiratory diseases learned
- to explain the pathogenetic mechanisms of cardiovascular and respiratory diseases and hemodynamic changes in heart disease
- to synthesize clinical data and to develop an investigation plan for major clinical syndromes in cardiology and pneumology
- to interpret an electrocardiogram, a cardiac ultrasound scan, spirometry and arterial gasometry
- to describe the semiological elements of a thoracic radiography
- to develop a complete diagnosis of the main cardiac and respiratory diseases
- to recommend lifestyle changes for each learned disease

- to complete a medical treatment plan for each cardiovascular and respiratory disease.
- to describe the side effects of drug classes used in cardiovascular and respiratory systems
- to analyze the common prognostic factors in the main cardiovascular and respiratory diseases.

**Course content:**

1. Approach of the patient with cardiovascular disease
2. Atherosclerosis
3. Arterial hypertension
4. Heart failure
5. Cardiac arrhythmias
6. Ischemic heart disease
7. Cardiomyopathies
8. Acute rheumatism
9. Infective endocarditis
10. Valvulopathies
11. Congenital heart disease
12. Pericardial diseases
13. Aortic and peripheral artery diseases
14. Deep vein thrombosis and pulmonary thromboembolism
15. Cor pulmonale
16. Syncope
17. Approach of the patient with pulmonary diseases
18. Pneumonias
19. Pleural effusion
20. Asthma
21. Bronchiectasis
22. Chronic obstructive pulmonary disease
23. Respiratory failure
24. Fibrosing interstitial pneumonias
25. Pneumothorax.

**Practical activities:**

- a. During the clinical internships the students will approach (will perform anamnesis, objective examination and data synthesis) under the guidance of the group assistants the following types of clinical cases, having the obligation to record the observations in their internship notebook:
  1. The approach of the patient with cardio-vascular pathology
    - valvulopathy
    - rhythm and driving disorders
    - cardiomyopathy

- high blood pressure
- heart failure
- atherosclerosis
- ischemic heart disease: stable form, acute coronary syndrome, myocardial infarction with and without ST elevation, myocardial infarction complications
- peripheral artery disease, critical ischemia
- deep vein thrombosis. Pulmonary thromboembolism

## 2. The patient's approach with respiratory pathology

- respiratory failure
- pneumonia
- chronic obstructive pulmonary disease. Chronic pulmonary heart
- bronchial asthma
- pleurisy.

b. During the clinical internship, in addition to the activities carried out in the patient rooms and in the paraclinical examination offices, the students will participate in other activities such as:

- practical demonstrations of paraclinical examinations for diagnostic purpose
- 2 sessions per week (Tuesdays and Wednesdays):

- electrocardiography
- holter monitoring ecg
- holter TA monitoring
- test of effort
- myocardial scintigraphy
- 2D echocardiography
- Doppler echocardiography
- transesophageal echocardiography
- coronarography
- cardiac catheterization
- Doppler arterial ultrasound
- venous Doppler ultrasound.

- practical demonstrations of the results of the interventional therapeutic procedures for coronary and peripheral arteries (daily, after the report of the guard).

## References:

1. D. Pop, Zdrengea D , Roșu R, Caloian B, Cismaru G, Comșa H, Grosz Cs, Gușetu G. CARDIOVASCULAR DISEASE. 2018. Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca
2. Dana Pop, Doina Todea, Dumitru Zdrengea Radu Roșu, Bogdan Caloian, Gabriel Cismaru, Horațiu Comșa, Csongor Grosz, Gabriel Gușetu, Nicoleta Motoc, Ana Florica Chiș. Respiratory disease student manual. 2019. Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca

3. Zdrengea D, Pop D, Gusetu G, Cismaru G, Caloian B, Roșu R. Urgențe cardiovasculare în camera de gardă-editia a 2-a. Ed. CLUSIUM. 2019
4. Dan L. Longo, HARRISON. MANUAL DE MEDICINĂ editia 18, Editura ALL, 2014, ISBN: 978-606-587-332-2
5. J. Larry Jameson, Harrison's Principles Of Internal Medicine, 20th edition, McGraw Hill Professional, 2018 ISBN: 978-125-964-403-0
6. Eduard Apetrei, Cardiologie Clinica, Editura Medicala CALLISTO, 2015, ISBN: 978-606-804-318-0
7. Douglas P. Zipes, Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, Elsevier, 2018 ISBN: 978-032-346-342-3
8. William F. Armstrong, Feigenbaum's Echocardiography, Wolters Kluwer Health, 2019, ISBN: 978-145-119-427-2
9. Ary L. Goldberger, Goldberger's Clinical Electrocardiography, A Simplified Approach, Elsevier, 2018 ISBN: 978-032-340-169-2
10. Toronto notes 2020 (Ed 36)
11. Guidelines of the European Society of Cardiology  
<https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines>  
 2018 ESC/ESH Arterial Hypertension (Management of)  
 2018 Fourth Universal Definition of Myocardial Infarction  
 2018 Syncope (Guidelines on Diagnosis and Management of)  
 2017 Valvular Heart Disease (Management of)  
 2017 Peripheral Arterial Diseases (Diagnosis and Treatment of)  
 2017 Acute Myocardial Infarction in patients presenting with ST segment elevation (Management of)  
 2016 Atrial Fibrillation (Management of)  
 2016 Dyslipidaemias (Management of)  
 2016 CVD Prevention in Clinical Practice (European Guidelines on)  
 2016 Acute and Chronic Heart Failure  
 2015 Infective Endocarditis (Guidelines on Prevention, Diagnosis and Treatment of)  
 2015 Pericardial Diseases (Guidelines on the Diagnosis and Management of)  
 2015 Acute Coronary Syndromes (ACS) in patients presenting without persistent ST-segment elevation (Management of)  
 2015 Pulmonary Hypertension (Guidelines on Diagnosis and Treatment of)  
 2014 Hypertrophic Cardiomyopathy  
 2014 Aortic Diseases  
 2014 Acute Pulmonary Embolism (Diagnosis and Management of)  
 2013 Stable Coronary Artery Disease (Management of)  
 2013 Cardiac Pacing and Cardiac Resynchronization Therapy

**Evaluation:** Common exam with Interventional Cardiology and Pneumology

- Written exam 50%
- Practical exam 50%

## B. CARDIOLOGY – HEART INSTITUTE

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course:</b>	<b>Interventional Cardiology</b>
<b>Course coordinator:</b>	<b>Prof. Dr. Dan Blendea, MD, PhD</b>
<b>Department:</b>	<b>Internal Medicine</b>
<b>Discipline:</b>	<b>Cardiology - “Niculae Stancioiu” Heart Institute</b>
<b>Course code:</b>	<b>MED5101EN</b>

Semester	Courses Type	Lectures			Practical activities			Individual study	TOTAL	Evaluation
		hours/week			hours/sem.					
		L	PA	CI	L	PA	CI			
I	Compulsory	-	1	-	-	7	-	7	6	Written exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Cardiovascular and respiratory system: Anatomy, Physiology, Pathophysiology, Pharmacology, Methodology of scientific research

### General objectives:

At the end of the course, students will be able to correctly carry out the therapeutic management of patients with the main cardiovascular and respiratory diseases

### Specific objectives:

At the end of the course students will be able

- to list some of the etiological factors of the learned cardiovascular and respiratory diseases.
- to explain the pathogenetic mechanisms of cardiovascular and respiratory diseases and the hemodynamic changes that occur in heart diseases
- to synthesize the clinical data and to elaborate an investigation plan for the main clinical syndromes in cardiology and pulmonology
- to interpret an electrocardiogram, a cardiac ultrasound bulletin, spirometry and arterial gasometry
- to describe the semiological elements of a chest X-ray
- to elaborate a complete diagnosis of the main heart and respiratory diseases
- to make a plan of hygienic recommendations for each condition learned
- to draw up a plan of drug treatment of each cardiovascular and respiratory disease.

- to describe the side effects of the classes of drugs used in the pathology of the cardiovascular and respiratory apparatus
- to associate the common prognostic factors in the main cardiovascular and respiratory diseases learned.

**Course content:**

- Interventional cardiology
- Cardiac catheterization in valvular diseases
- Is cardiac catheterization necessary?
- Coronary angiography
- Coronary angioplasty
- Non-coronary angioplasty
- Interventional approach to valvular diseases
- Ischemic stroke

**References:**

1. D. Pop, Zdrenghea D , Roşu R, Caloian B, Cismaru G, Comşa H, Grosz Cs, Guşetu G. CARDIOVASCULAR DISEASE. 2018. Editura Medicală Universitară „Iuliu Haţieganu” Cluj-Napoca
2. Dana Pop, Doina Todea, Dumitru Zdrenghea Radu Roşu, Bogdan Caloian, Gabriel Cismaru, Horaţiu Comşa, Csongor Grosz, Gabriel Guşetu, Nicoleta Motoc, Ana Florica Chiş. Respiratory disease student manual. 2019. Editura Medicală Universitară „Iuliu Haţieganu” Cluj-Napoca
3. Kumar&Clarks. Clinical Medicine. Tenth Edition. Elsevier.2020
4. Douglas P.Zipes, Braunwald`s Heart Disease: A Textbook of Cardiovascular Medicine, Elsevier, 2018 ISBN: 978-032-346-342-3

**Evaluation:**

- complex multiple choice type examination with 50 questions with multiple answers (40 questions from internal medicine: cardiology + respiratory pathology, respectively 10 questions from the topic of pulmonology) 50%
- examination of a patient, followed by the presentation and discussion of the case, of the peculiarities of the diagnosis, as well as of the therapeutic strategy 40%
- portfolio of activity (including the appreciation of the activity at the internship on behalf of the group supervisor) 10%

## C. PNEUMOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Pneumology</b>
<b>Course coordinator:</b>	<b>Prof. Carmen Monica Pop, MD, PhD</b> <b>Prof. Doina Todea, MD, PhD</b> <b>Assoc. Prof. Man Milena, MD, PhD</b> <b>Lecturer Bianca Gergely-Hancu Domokos, MD, PhD</b>
<b>Departament</b>	<b>Medical specialties</b>
<b>Discipline:</b>	<b>Pneumology</b>
<b>Course code:</b>	<b>MED5101EN</b>

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours / week			hours / sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	-	2	14	-	14	40	68	2	Written + practical exam

L=lectures; PA= practical activities; CI= clinical internship

### Pre-requisites:

- Anatomy, Physiology, Pathophysiology, Respiratory Semiology, Pharmacology, Radiology, Methodology of Scientific Research

### General objectives:

At the end of the course students will be able to develop a diagnostic and treatment algorithm

### Specific objectives:

At the end of the course, students will be able to perform a complete examination, perform an anamnesis of patients with respiratory diseases, interpret a thoracopleuropulmonary radiography, request other necessary investigations, analyze results in clinical context, establish diagnosis of reperfusion diseases, establish positive diagnosis, know the differential diagnosis), to know the principles of treatment, to know how to develop a treatment plan, to release a medical prescription.

### Course content:

1. Pulmonary suppurations: pulmonary abscess, bronchiectasis
2. Hydatid cyst
3. Diffuse interstitial lung disease and idiopathic pulmonary fibrosis

4. Sarcoidosis
5. Sleep apnea syndrome
6. Mediastinal syndrome
7. Tabacology (tobacco addiction, smoking-induced pathology)
8. Tuberculosis

**Practical activities:**

1. Clinical examination (anamnesis and objective examination) of patients with respiratory diseases - observation sheet
2. Pulmonary imaging: pulmonary radiography and computer tomography
3. Functional respiratory explorations: spirometry
4. Other diagnostic procedures used in respiratory diseases (non-specific sputum examination, specific microscopy, culture, bronchoscopy, thoracocentesis)
5. Presentation of the clinical case of tuberculosis with its particularities
6. Presentation of clinical cases of pneumology: diagnostic and treatment algorithm, presentation methods
7. Diagnosis of obstructive sleep apnea syndrome: investigation and treatment
8. Tabacology. Methods of diagnosis, evaluation and techniques used in anti-smoking counseling.

**References:**

1. Doina Todea (Coord.), *Apneea in somn si comorbiditatile sale*, Note de curs, Editura Medicala Universitara „Iuliu Hațieganu” 2011, Cluj-Napoca,
2. C Pop (Coord.), *Tuberculoza*, Ed Did si Pedagogica, Cluj Napoca, 2009
3. *Pneumologie*, sub red. Bogdan M; Ed. Universitară „Carol Davila”, București, 2008.
4. *European Respiratory Monograph*, 2009-2012,
5. Harrison – *Principiile Medicinii Interne*, vol. 1 și 2, 14<sup>th</sup> ed., sub red. Fauci, Braunwald, Isselbacher, Wilson, Martin, Kasper, Hauser, Longo; ediția a II-a în limba română, Ed. Teora, București, 2003.
6. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc
7. Murray and Nadel's *Textbook of Respiratory Medicine*, 5<sup>th</sup> ed., sub red. Mason RJ, Broaddus VC, Martin TR, King TE Jr., Schraufnagel DE, Murray JF, Nadel JA; Saunders Elsevier, Philadelphia, 2010

**Evaluation:** Common exam with Interventional Cardiology and Internal Medicine. Cardiology (20% of the final grade)

- Written exam
- Assessment during the year

## CLINICAL PHARMACOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Clinical Pharmacology  
**Course coordinator:** Assoc. Prof. Ioana Corina Bocşan, MD, PhD  
**Department:** Functional Sciences  
**Discipline:** Pharmacology, Toxicology and Clinical Pharmacology  
**Course code:** MED 5 1 02 EN

Semester	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.								
		L	PA	CI	L	PA	CI						
I	Compulsory	1,5	1,5	-	21	21	-	58	100	4	Written + practical exam		

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Pharmacology 3rd year, Physiology, Pathophysiology, Methodology of Scientific research

### General objectives:

At the end of the course, students achieve an informational core on drugs that are used to treat different diseases, so as to have competencies on the drugs learned for the correct therapeutic management of the patient

### Specific objectives:

At the end of the course students will be able to:

- list the classes of drugs used in with cardiovascular, respiratory or neuropsychiatric diseases; to know representatives of these classes
- to explain the mechanisms of action of antiarrhythmic drugs, drugs used in ischemic heart disease, hypertension or cardiac insufficiency
- to explain the mechanisms of action of antitussive and mucolytic agents, bronchodilators and antiinflammatory drugs used in respiratory diseases,
- to explain the mechanisms of action of hypnotic, sedative and tranquilizer drugs, antidepressant, neuroleptic, antiepileptic, myorelaxing, antiparkinsonian drugs, agents used in dementia
- mention the side effects of the medication and manage the adverse reactions of drugs used in cardiovascular, respiratory or neuropsychiatric diseases

- to efficiently manage the patient, based on his/her characteristics
- to monitor drug therapy in digestive, metabolic and blood diseases
- to use methods to prevent prescription errors
- to explain the importance of gender, age and pharmacogenetic aspects in the variability of patients' individual response
- students will be familiar with the principles of treatment of acute intoxications
- to recognize and describe the symptoms of the main drug addictions

**Course content:**

1. Drugs used in cardiovascular diseases. Beta blockers. Drugs that act in renin-angiotensin – aldosterone system. Calcium channel blockers.
2. Drugs used in ischemic heart disease. Nitrates. Beta blockers as antiangina drugs. Calcium channel blockers as antiangina drugs. Antiischemic vasodilators.
3. Antiarrhythmic drugs.
4. Antihypertensive agents. Diuretics in hypertension. Beta blockers. Drugs that act in renin-angiotensin – aldosterone system. Calcium channel blockers. Alpha adrenergic agents. Central sympathetic inhibitors. Vasodilators. Treatment of hypertensive emergency. Treatment of hypertension in particular situations.
5. Drug used in cardiac insufficiency. Diuretics in heart failure. Drugs that act in renin-angiotensin – aldosterone system in heart failure. Vasodilators in heart failure. Beta blockers in heart failure. Inotropic positive agents
6. Pharmacology of respiratory system. Mucolytic and anticough drugs. Drugs used in asthma. Drugs used in allergic rhinitis. Pulmonary surfactant.
7. Sedative, hypnotic and tranquilizing drugs.
8. Antidepressant drugs. Neuroleptic drugs.
9. Drugs used in Parkinson disease. Antiepileptic drugs. Central and peripheral myorelaxing drugs.
10. Drugs used in neurodegenerative disorders. Nootropic drugs.
11. Substances for abuse. Drugs and substances with addictive potential. Drug addictions.

**Practical activities:**

1. Antiangina treatment. Treatment of acute coronary syndrome. Vasodilator therapy.
2. Therapy of various cardiac arrhythmias
3. Treatment of hypertension
4. Treatment of cardiac insufficiency
5. Inhalatory dosage forms. Treatment of asthma and COPD. Treatment of allergic rhinitis.
6. Treatment of insomnia. Treatment of depression.

7. Treatment of epilepsy. Treatment of Parkinson disease.

**References:**

1. Anca Dana Buzoianu – Farmacologie. Curs pentru studenții anului V, Ed. Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2016
2. Karen Whalen PharmD – Lippincott Illustrated Reviews: Pharmacology- Seventh, North American Edition, 2018
3. Katzung BG. – Basic and Clinical Pharmacology (14<sup>th</sup> ed) Mc Graw Hill 2017
4. Rang HP, Dale MM et al. Pharmacology 8<sup>th</sup> ed., Elsevier Churchill Livingstone, 2015
5. Goodman and Gilamn’s Manual of Pharmacology and Therapeutics, 13 th ed, Mc Graw Hill Publishing, 2017
6. Feather A, Randall D, Waterhouse M – Kumar și Clark Medicină clinică. Azamfirei L, Buzoianu AD, Gheonea ID- coordonatorii ediției în limba română, Ed. A 10-a, Ed.Hipocrate, București 2021
7. Merali Z, Woodfine JD(eds). Essential MedNotes 2016. 32<sup>nd</sup> ed. Toronto Notes for Medical Students, Inc, Toronto, 2016.
8. Anca Dana Buzoianu – Farmacologie. Curs pentru studenții anului IV, Ed. Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2015
9. <https://www.anm.ro> Nomenclatorul Medicamentelor
10. Memomed 2020/ Agenda Medicală 2020

**Evaluation:**

- |                  |     |
|------------------|-----|
| ▪ Written exam   | 70% |
| ▪ Practical exam | 30% |

## NEUROSCIENCES – 10 CREDITS

- NEUROLOGY
- NEUROSURGERY

### A. NEUROLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Neurology  
**Course coordinator:** Prof. Dafin Fior Mureșanu, MD, PhD,  
 Assoc. Prof. Ioana Stănescu, MD, PhD  
 Lecturer Adina Dora Stan, MD, PhD  
**Department:** Neurosciences  
**Discipline:** Neurology and Pediatric Neurology  
**Course code:** MED 5103EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	8	-	10	56	-	70	120	246	10*	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

\*with the Disciplines Neurosurgery

#### Pre-requisites:

- Anatomy, morphopathology, physiology and pathophysiology of the central and peripheral nervous system, notions of clinical semiology, notions of general pharmacology

#### General objectives:

- Acquiring practical skills to recognize the main neurological syndromes
- Understanding how neurological patients are treated

#### Specific objectives:

- The recognition of semiological features in neurological patients
- Integration of clinical symptomatology in a syndrome
- Acquiring theoretical knowledge and direct clinical practice on 3 successive stages:
  - neurological semiology
  - neurological syndromology
  - neurological pathology

**Course content:**

1. Introduction in neurology. Neurological examination – basic principles. Neurological paraclinical examinations.
2. Sensory clinical examination. Spinal cord sensory syndromes. Thalamic sensory syndrome. Cortical sensory syndrome.
3. Motility and reflexes
  - The motor pathways (neuroanatomy)
  - Motility testing: volutar motility
    - Active movements
    - Segmental muscle strength
    - Paresis tests
  - Examination of reflexes
    - Deep tendon reflexes
    - Cutaneous,articular and postural reflexes
    - Pathologic reflexes
4. The muscle tone
5. Upper motor neuron syndrome (pyramidal syndrome). Lower motor neuron syndrome. Workout in a patient with motor deficit (paralysis, hemiplegia, paraplegia)
6. Gait examination; pathological gaits
7. Extrapyrmidal semiology
8. Involuntary movements
9. Cerebellar syndrome
  - Neuroanatomy
  - Testing cerebellar function
  - Cerebellar syndrome; cerebellar pathology
10. Cranial nerves semiology
  - Olfactory nerve
  - Optic nerve
  - Oculomotor nerves (III, IV, VI)
  - Trigeminal nerve
  - Facial nerve
11. Cranial nerves semiology
  - Acustico-vestibular nerve
  - Glossopharyngeus nerve
  - Vagus nerve
  - Accesory nerve
  - Hypoglossal nerve
12. Cranial nerves pathology. Brainstem syndromes
13. Cortical syndromes (frontal, parietal, temporal, occipital)
14. Cognitive functions

- Agnosia
  - Aphasia
  - Language testing
  - Apraxias
15. Alteration in consciousness: stupor and coma; persistent vegetative state; brain death. Sleep disorders
  16. Autonomic nervous system semiology; Dysautonomias
  17. Cerebrovascular diseases
    - Neurovascular syndromes
    - Ischemic stroke. Hemorrhagic stroke.
  18. Cerebrovascular diseases
    - Neurovascular syndromes
  19. Ischemic stroke. Hemorrhagic stroke. Subarachnoideal hemorrhage
  20. Infectious and inflammatory diseases of the nervous system (viral, bacterial, fungic, parasitary, prionic). Meningites and encephalitis
  21. Demyelinating diseases
    - Multiple sclerosis
    - Acute disseminated encephalomyelitis
  22. Neurodegenerative and hereditary diseases
    - Degenerative diseases with dementia
    - Degenerative diseases with epilepsy
    - Degenerative diseases with ataxia
    - Degenerative diseases with motor deficit and amyotrophy (ALS, progressive spinal muscular atrophyes)
  23. Movement Disorders. Parkinson disease and Parkinsonism. Huntington disease. Wilson disease
  24. Spinal cord diseases (spinal cord compressions; myelopathies)
  25. Traumatic Brain Injuries and Spinal Cord Injuries
  26. Peripheral nervous system pathology. Polyradiculoneuritis
  27. Muscular diseases (muscular dystrophies, myotonias, polimyositis). Myasthenia and myasthenis syndromes
  28. Neuropathic pain. Headache and migraine; craniofacial pain. Encephalopathies
  29. Neurologic symptoms in general diseases.

**Practical activities:**

1. Involvement in hospital activity
  - Clinical tour
  - Active involvement in patient's clinical examination
2. Specific interacting modalities with neurologic patient
3. Learning of specific signs and symptoms of a neurological emergency in:

- Strokes
  - Parkinson disease
  - Multiple sclerosis
  - Epilepsy
  - Headaches
4. Obtaining the final etiological diagnosis by integrating the clinical features with the paraclinical results and lab data for each patient case. Differential diagnosis.
  5. Discussing the prophylactic and therapeutic measures. Monitoring the results and minimalizing side effects
  6. Establishing a recovery plan in order to avoid disabilities occurrence or to enhance improvement
  7. Analyzing the prognostic, evolution and the evaluation of recovery during treatment.

**References:**

1. *Neurology* Course (electronic form)
2. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc
3. Allan Ropper, Martin Samuels, Joshua Klein, Adams and Victor's *Principles of Neurology*, Ed. 10, ISBN: 9780071794794, New-York, McGraw-Hill Companies, 2014
4. Kenneth F. Swaiman, Stephen Ashwal, (2012), 5<sup>th</sup> edition; *Pediatric Neurology: Principles and Practice*, 2-Volume, MOSBY Inc.
5. Paul A. Young, Paul H. Young and Daniel L. Tolbert (2015); *Basic clinical neuroscience*. Philadelphia: Wolters Kluver.

**Evaluation:**

- Written exam                      70%
- Practical exam                      30%

## B. NEUROSURGERY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Neurosurgery  
**Course coordinator:** Prof. Ioan Stefan Florian, MD, PhD  
**Department:** Neuroscience  
**Discipline:** Neurosurgery  
**Course code:** MED 5 1 03 EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	-	4	14	-	14	-	28	10*	Written exam

L = lectures; PA = practical activities; CI = clinical internship

\*with the disciplines Neurology

**Pre-requisites:** -

### General objectives:

Acknowledgment of elementary neurosurgical principles and techniques.

### Specific objectives:

Acknowledgment of the clinical aspects, of the investigation means, principles of treatment, basic techniques, the treatment of the postoperative complications at neurosurgical patients.

### Course content:

- 1. Introduction in Neurosurgery** – acknowledgment of basic principles of neurosurgery, basic neurosurgical techniques, aspects of medical care in neurosurgical patients.
- 2. Head trauma** – acknowledgment of the neurosurgical pathological aspects in head trauma patients, investigation methods and their correlation with the neurosurgical operative indication, pre-hospital emergency medical care principles, and principles of surgical treatment, description of basic techniques, nursing and postop treatment of head trauma patients.
- 3. Spinal injuries** - acknowledgment of the neurosurgical pathological aspects in spinal trauma patients, investigation methods and their correlation with the neurosurgical operative indication, pre-hospital emergency medical care

principles, principles of surgical treatment, description of basic techniques, nursing and postop treatment of spinal injured patients.

4. **Brain tumors** – acknowledgment of the cerebral tumoral pathology, clinical aspects in brain tumors, investigation methods, case management principles, operative indications, principles of neurosurgical treatment and techniques, adjuvant therapies, principles of prevention and treatment of postoperative complications

5. **Spinal cord compressions** - acknowledgment of the pathology, clinical aspects, investigation methods, case management principles, operative indications, principles of neurosurgical treatment and techniques, principles of prevention and treatment of postoperative complications, nursing and postop treatment of patients with neurological deficits due to spinal cord compression

6. **Brain hemorrhagic stroke** – acknowledgment of the different types of hemorrhages, causes, risk factors, investigations methods regarding operative indications and complications detection, pre-hospital emergency medical care, principles of neurosurgical treatment and techniques, prevention and treatment of postoperative complications, nursing and treatment of patients with neurological sequellae

7. **Pediatric Neurosurgery** – introduction to the neurosurgical congenital/malformative pathology in children, presentation of developmental abnormalities, clinical recognition of neurosurgical pathologies in children, radiological investigations and principles of treatment.

#### **References:**

1. Florian Ioan Stefan, *Neurochirurgie – curs pentru studenti*, Editura Didactica Universitara "Iuliu Hațieganu", Cluj-Napoca, 215 pag., 2003.
2. Mark S. Greenberg. *Handbook of Neurosurgery* Thieme Medical Publishers, New York, 2006
3. L.N. Shekar, R.G. Fessler, *Atlas of Neurosurgical Techniques, Brain*, Thieme 2006
4. coord. ed. în lb. română: Ioan Ștefan Florian, *Principiile Chirurgiei Neurologice* Editia a 4-a, Editura Hipocrate, 2019.

#### **Evaluation:**

- Written exam

## RADIOLOGY. THE CHEST, HEART AND VESSELS. THE CENTRAL NERVOUS SYSTEM

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Radiology. The chest, heart and vessels. The central nervous system  
**Course coordinator:** Assoc. Prof. Diana Feier, MD, PhD  
 Lecturer Andrei Lebovici, MD, PhD  
**Department:** Surgical Specialties  
**Discipline:** Radiology  
**Course code:** MED5205EN

Semester	Courses type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	2	-	14	14	-	28	56	2	Written + oral exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** -

### General objectives:

- Underlining the indications and contraindications of each examination technique as well as learning of algorithms of examination in order to reduce exposure to radiation. Correlation of common and/or specific pathological imaging findings with organ pathology.

### Specific objectives:

- Recognition of the imaging method
- Recognition of the normal anatomical elements and of the variants
- Recognition of the semiological elements and their signification
- Recognition of the pathological findings
- Discussion of the positive and differential diagnosis
- Elaborating a radiological report.

### Course content:

- Lungs:** anatomy and examination techniques. Pulmonary radiological semiology (opacity, lucency, mix image).
- Pulmonary syndromes:** parietal, pleural, alveolar filling, bronchial, interstitial. Lung **cancer**. **Mediastinal** disease.

3. **Heart** examination. Radio-imaging techniques: Contrast media used in radiology: indications, contraindications, risks; Imaging techniques of vascular examination (angiography, ultrasound, MRI, angioCT); Radiographic anatomy of the heart (PA and LL); Notions of echocardiography and MRI anatomy of the heart; Elementary radiographic semeiology of the heart. Enlargement of heart chambers.
4. The **pulmonary vascular syndrome**. The radiographic appearance of the heart in the main **valvulopathies**. The **miocardial** and **pericardial** syndrome.
5. Elementary changes in **peripheral arterial and venous diseases**. Elementary notions of vascular **interventional radiology**.
6. Radio-imaging of the **brain and spine**: CT and MRI findings in: stroke, tumors, trauma; MRI of the spine (disc hernia, tumors).
7. **Pediatric radiology**: peculiarities in imaging the chest and central nervous system.
8. **Emergencies**: Head and neck trauma, stroke; Thorax: trauma, pulmonary embolism, pneumotorax, pulmonary edema, cardiac tamponade; vascular emergencies, disc hernia.

#### **Practical activities:**

1. Respiratory system - Examination techniques (UIV, ultrasound, CT, MRI). Normal radio-imaging anatomy. Normal chest image. Syndromes: alveolar, interstitial, pleural, bronchial, parietal filling. Radiographic semiology of pulmonary nodules. Radiographic aspect in atelectasis
2. Mediastinum - Examination techniques (UIV, ultrasound, CT, MRI). Normal radiographic anatomy. Pathological aspects
3. Cord - Examination techniques (RX, ultrasound, CT, MRI). Radiographic anatomy, elementary radiographic semiology. Radiographic aspect in the syndrome of enlargement of the heart cavities, in the myocardial and pericardial syndrome
4. Peripheral vessels - Examination techniques. Radiographic changes in the pathology of peripheral arteries and veins
5. Nervous system - Examination techniques (RX, ultrasound, CT, MRI). Anatomy of radio-imaging, elementary radiographic semiology. Radiographic changes in the pathology of the central nervous system, spinal cord
6. Radiographic aspects in thoracic, surgical, central nervous system and spinal cord emergencies.

#### **References:**

1. Rădulescu D. (sub redacția). Radiologie medicala; Ed. IMF Cluj Napoca, 1983
2. Sutton D. Textbook of radiology and imaging, Ed. Churchill Livingstone 7<sup>th</sup> edition, 2003.

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## PEDIATRICS, PUERICULTURE, PEDIATRIC SURGERY – 12 CREDITS

### A. PEDIATRICS AND PUERICULTURE

**Field of study:** Health  
**Study programme:** Medicine  
**Course title:** Pediatrics and Puericulture  
**Course coordinator:** Prof. Man Sorin Claudiu, MD, PhD  
 Assoc. Prof. Cecilia Lazea, MD PhD  
**Department:** Mother and Child  
**Discipline:** Pediatrics Clinic I and III  
**Course code:** MED5206EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	6	-	12,5	84	-	174	97	360	12*	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

\*with the discipline Pediatric Surgery

#### Pre-requisites:

- Anatomy and embryology, Pathological anatomy, Histology, Medical biochemistry, Medical genetics, Microbiology, Epidemiology, Pharmacology, Physiology, Pathophysiology, Basics of communication, Basics of nursing, First aid, Hygiene prophylaxis, Nutrition and dietetics

#### General objectives:

At the end of the course students will be able to correctly manage the management of pediatric patients.

#### Specific goals:

At the end of the course students will be able to:

- Identify the normal aspects of somatic and psychomotor development of the child
- Establish a proper diet plan for the normal development of the infant and the baby
- Identify special nutritional needs in various diseases and establish a recovery plan

- Perform a complete clinical evaluation with anamnestic and objective examinations in the child
- Make a correct differential diagnosis and an appropriate investigation plan for the clinical classification of the patient
- Interpret laboratory and paraclinical data applied to the clinically evaluated case
- Mention the side effects of medication and to manage the adverse reactions of the drugs used
- Identify the particularities of the posology of medication, including particular aspects related to the medication administration technique (e.g. inhaled treatment of the child)
- Effectively manage patient management
- Monitor drug therapy in acute illness
- Use methods to prevent prescription errors
- Students will be familiar with the principles of acute poisoning
- Perform prophylaxis of certain diseases in the child's pathology.

**Course content:**

**1. Child care:** Child's growth and development. Baby's nutritional needs. Mother's milk and breast feeding. Cow's milk and artificial food. Diversified nutrition and nutrition of the young child, preschool and schoolchild

**2. Diseases of the respiratory system:** Acute respiratory insufficiency. Acute rhinopharyngitis. Streptococcal pharyngitis. Acute laryngitis. Bronchiolitis acute. Pneumonia. Bronchial asthma

**3. Diseases of the cardiovascular system:** Congenital heart disease. Endocarditis, myocarditis, non-rheumatic pericarditis. Heart failure

**4. Diseases of the digestive system:** Vomiting syndrome. Gastroesophageal reflux. Gastritis. Gastro-duodenal ulcer. Acute gastroenteritis. Acute dehydration syndrome. Hydroelectrolyte and acidobase disorders. Recurrent abdominal pain. Chronic hepatitis. Malabsorption syndrome and chronic diarrhea. Allergy to cow's milk proteins. Celiac disease. Infant and newborn jaundice.

**5. Reno-urinary disorders:** Glomerulonephritis and nephrotic syndrome. Urinary Tract Infection. Reno-urinary malformations. Acute kidney failure. Chronic renal failure.

**6. Hematological Diseases:** Anemia. Hemorrhagic syndromes. Leukemia and other malignancies.

**7. Diseases of nutrition and metabolism:** Rickets. Diabetes. Obesity. Growth failure and malnutrition. Short stature

**8. Pediatric emergencies:** Coma. Convulsions. Acute poisoning. Shock (hypovolemic, cardiogenic, anaphylactic, neurogenic, infectious). Fever in children (fever without source, occult bacteraemia, fever of unknown origin, antipyretics).

**9. Genetic diseases:** Chromosomopathies. Monogenic diseases (galactose, phenylketonuria, Gaucher disease). Embryo-and fetopathies

**10. Pediatric rheumatology:** Juvenile idiopathic arthritis. Acute articular rheumatism. Diagnostic criteria in other rheumatic diseases.

**Practical activities:**

A. Child health care

1. Examination of the sick child with the preparation of the observation sheet. Anamnesis. Clinical examination, including morphogram, thermometry, blood pressure measurement. Establishing the examination program and the therapeutic plan. Completing the discharge documents. Measures of health education

2. Caring for the sick child

3. Food: The technique of feeding the baby. Establishing the diet according to the specificity of the disease and the age of the child

4. Treatment: oral medication administration, injection treatment (intramuscular, intravenous), artificial respiration, gastric lavage

B. Harvesting techniques

1. Pharyngeal secretion collection

2. Feces collection

3. Blood collection

4. Urine collection

C. Interpretation of laboratory reports and results of diagnostic explorations

1. Complete urine examination: density, proteinuria, sugar, pus, urobilinogen, bile pigments, ketone bodies, urinary sediment, urine ionogram, pH

2. The cerebrospinal fluid - Pandy reaction. Biochemistry exams: proteinuria, glycuria and chloruria. Bacteriological examination. Microscopic examination of the smear

3. Hematological examinations of peripheral blood: hemolothogram, blood picture, reticulocytes, bleeding time, coagulation, medulograma

4. Radiological films

5. ECG

6. Biochemical examinations in the blood: non-specific inflammatory tests, functional-biochemical, liver, renal, metabolic tests

7. Pleural fluid: Rivalta test, microscopic examination of the smear

8. Examination of the seat: coproculture, coprocytogram, pH, digestion

D. Presentations of clinical cases.

**References:**

1. Man SC, sub redacția; Cherecheș-Panța P, Iacob D, Ichim GE, Mihețiu M, Mureșan M, Pop D, Sas V, Schnell CN. *Pediatrics for Medical Students*, Editura Risoprint, 2017, ISBN 978-973-53-2041-6

2. Kliegman R., Stanton BF, St Geme JW, Scor NF, Nelson *Textbook of Pediatrics*, 20th ed. W.B. Saunders Company, 2016
3. Marcdante K. Nelson *Essentials of Pediatrics*. 6th ed W.B. Saunders Company, 2010
4. Man C. Sorin, Nanulescu V. Mircea, *Pediatria Practică*. Ed Risoprint, Cluj Napoca, 2006.
5. Maria Mihețiu. *Puericultura practică*. Casa Cărții de Știință, 2008.
6. Toronto notes 2016 (Ed 35)
7. Man SC, sub redacția; coautori Cherecheș-Panța P, Iacob D, Ichim GE, Mihețiu M, Mureșan M, Pop D, Sas V, Schnell CN. *Pediatrics for Medical Students*, Editura Risoprint, 2017, ISBN 978-973-53-2041-6
8. Kliegman, Nelson *Textbook of Pediatrics*, 20th ed. W.B. Saunders Company, 2016
9. Marcdante K. Nelson *Essentials of Pediatrics*. 6th ed W.B. Saunders Company, 2010
10. Man C. Sorin, Nanulescu V. Mircea, *Pediatria Practică*. Ed Risoprint, Cluj Napoca, 2006.
11. Maria Mihețiu. *Puericultura practică*. Casa Cărții de Știință, 2008.

**Evaluation:**

- Written exam                      40%
- Practical exam                      60%

### C. PEDIATRIC SURGERY

<b>Domain</b>	<b>Health</b>
<b>Program</b>	<b>Medicine</b>
<b>Lecturers</b>	<b>Pediatric Surgery</b>
<b>Chairman</b>	<b>Lecturer Gocan Horațiu, MD, PhD</b>
<b>Department</b>	<b>Mother and Child</b>
<b>Discipline</b>	<b>Surgery and Pediatric Surgery</b>
<b>Code</b>	<b>MED5206EN</b>

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	3	7	-	21	48	76	12*	Written + practical exam

L=lecturers; P=practical;

\*with the Discipline Pediatrics and Puericulture

**Pre-requisites:** -

**General objectives:**

- General principles of pediatric surgery
- Management of main surgical congenital and acquired pathology of newborn, infant and child

**Specific objectives:**

- Clinical exam of infants and children with surgical pathology
- Diagnosis (clinical presentation, radiology and lab studies) of children with surgical diseases
- Attending surgical procedures
- Emergencies in infants and children
- Digestive malformations
- Pediatric urology

**Course content:**

1. Esophageal atresia and tracheo-esophageal fistula
2. Duodenal atresia and stenosis
3. Small bowel atresia and stenosis
4. Pyloric stenosis
5. Anorectal malformations
6. Hirschprung's disease

7. Diaphragmatic hernia
8. Acute appendicitis in children
9. Meckel diverticulum
10. Abdominal trauma
11. Meconium ileus and meconium peritonitis
12. Malrotation and volvulus
13. Necrotizing enterocolitis
14. Hernia and hydrocele
15. Hypospadias
16. Omphalocele
17. Gastroschisis
18. Undescended testis
19. Phymosis
20. Acute scrotum

**Practical activities:**

1. Presentation of the pathology of the newborn
2. Presentation of the pathology of the young and preschool child
3. Occlusive syndrome in infants and young children
4. Pediatric kidney pathology
5. Congenital malformations of the digestive tract
6. Malformations of the abdominal wall of the child
7. Acute surgical abdomen.

**Bibliography:**

1. Anca Budusan, *Pediatric Surgery for medical students*. Ed. Medicala Universitara "Iuliu Hațieganu" Cluj-Napoca, 2018
2. Ashcraft's *Pediatric Surgery*, 6<sup>th</sup> Edition, Saunders 2014

**Evaluation:**

- Written exam            50%
- Practical exam           50%

## ENT – OTOLARYNGOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Otolaryngology  
**Course coordinator:** Assoc. Prof. Magdalena Chirilă, MD, PhD  
 Lecturer Sever Septimiu Pop, MD, PhD  
**Department:** Surgical Specialties  
**Discipline:** Otolaryngology  
**Course code:** MED5207EN

Semester	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	4	4	-	28	28	-	69	125	5	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

### Pre-requisites:

- Anatomy, Physiology, Pathophysiology, Pharmacology, Methodology of Scientific Research

### General objectives:

1. Basic knowledge of ENT pathology
2. Running into good theoretical and practical issues in therapeutical and diagnosis management of different ENT pathologies.
3. Since the great majority of medical students will not become otolaryngologists, it becomes much more important to them to understand how to recognize potentially dangerous problems that should be referred to the ENT specialist, as well as how to manage uncomplicated cases that can be taken care of at the primary care level.

### Specific objectives:

1. Knowing the theoretical principles in anatomy, examination and main pathologies of each organ
2. Development of practical skills in performing the clinical examination of the ENT patient
3. Recognition of the main pathologies in otolaryngology based on typical pictures and videos presented during the lectures and practical stages

4. Recognition of the main pathologies in otolaryngology based on examination of ENT patients

**Course content:**

**A. RHINOLOGY**

1. ANATOMY OF THE NOSE AND PARANASAL SINUSES
  2. EXAMINATION OF THE NOSE AND PARANASAL SINUSES: Symptoms of nasal diseases. Clinical examination. Investigations
  3. ACUTE AND CHRONIC RHINITIS: Acute Rhinitis (Coryza). Acute Purulent Rhinitis. Diphtheria. Chronic Specific Rhinitis: Syphilis, Tuberculosis, Rhinoscleroma, Leprosy. Chronic Atrophic Rhinitis
  4. NASAL MANIFESTATIONS IN SYSTEMIC DISEASES: Wegener's Granulomatosis. Sarcoidosis
  5. ALLERGIC RHINITIS
  6. NON-ALLERGIC VASOMOTOR RHINITIS
  7. NASAL POLYPOSIS
  8. RHINO-SINUSITIS: Acute Sinusitis. Chronic Rhino-sinusitis. Fungal Sinusitis
  9. EPISTAXIS
  10. TUMORS OF THE NOSE AND PARANASAL SINUSES: Benign Tumors. Malignant Tumors
  11. TRAUMA: Nasal fractures
  12. SKIN DISEASES OF THE NOSE: Infections: Vestibulitis, Furuncle, Erysipelas. Rhinophyma. Tumors: Benign tumors, Malignant tumors: SCC, BCC, Melanoma
- B. PHARYNGOLOGY**

1. ANATOMY OF THE PHARYNX
  2. EXAMINATION OF THE PHARYNX: Symptoms. Clinical Examination. Investigations
  3. PHARYNGITIS: Acute Pharyngitis. Acute Follicular Tonsillitis. Peri-tonsillar Abscess. Diphtheria. Vincent's Angina. Scarlet Fever. Pharyngeal Manifestations in Blood Disorders: Infectious Mononucleosis, Agranulocytosis. Chronic Non-specific Pharyngitis. Chronic Tonsillitis. Adenoids. Chronic Specific Pharyngitis: Tuberculosis, Syphilis
  4. NASOPHARYNGEAL CANCER
  5. BENIGN TUMORS OF THE NASOPHARYNX
  6. TUMORS OF THE OROPHARYNX: Benign Tumors, Malignant Tumors
  7. TUMORS OF THE HYPOPHARYNX: Benign Tumors, Malignant Tumors
  8. FOREIGN BODIES IN THE PHARYNX
  9. NEUROLOGICAL DISORDERS OF THE PHARYNX: Sensory disorders: Anesthesia, Hyperesthesia, Paresthesia and Glossopharyngeal Neuralgia. Motor disorders: Paralysis, Spasms
- C. LARYNGOLOGY**
1. ANATOMY OF THE LARYNX

2. EXAMINATION OF THE LARYNX: Symptoms. Clinical Examination. Investigations
  3. LARYNGITIS: Acute Laryngitis. Acute Epiglottitis. Laryngeal Diphtheria. Chronic Non-specific Laryngitis. Chronic Specific Laryngitis: Tuberculosis, Syphilis, Leprosy, Scleroma. Laryngeal Hyperkeratosis. Reinke's Edema. Vocal Cord Nodules. Vocal Cord Polyps
  4. BENIGN LARYNGEAL TUMORS
  5. MALIGNANT LARYNGEAL TUMORS
  6. NEUROLOGICAL DISEASES: Recurrent Laryngeal Nerve Palsy
  7. TRACHEOSTOMY
  8. FOREIGN BODIES
- D. OTOLOGY
1. ANATOMY OF THE EAR
  2. PHYSIOLOGY OF THE EAR
  3. EXAMINATION OF THE EAR: Symptoms. Clinical Examination. Investigations of Hearing
  4. DISEASES OF THE EXTERNAL EAR
    - 4.1. Diseases of the Auricle: Congenital Abnormalities. Trauma. Perichondritis. Skin Infections. Tumors
    - 4.2. Diseases of the External Auditory Canal: Wax. Foreign Bodies. Trauma. Localized External Otitis (Furuncle). Diffuse External Otitis. Otomycosis. Tumors
  5. DISEASES OF THE MIDDLE EAR: Injuries of the Eardrum. Bullous Myringitis. Acute Suppurative Otitis Media. Otitis Media with Effusion. Simple Chronic Suppurative Otitis Media. Cholesteatoma. Otosclerosis
  6. DISEASES OF THE INNER EAR
    - 6.1. Sudden Sensorineural Hearing Loss
    - 6.2. Progressive Sensorineural Hearing Loss: Presbycusis. Ototoxic Drugs. Noise Exposure. Infections. Meniere's Disease. Acoustic Neuroma. Management of the hearing impairment. Hearing loss in children
  7. PERIPHERAL VESTIBULAR SYNDROME: Vertigo. Examination of the Vestibular Function. Meniere's Disease. Benign Positional Paroxysmal Vertigo (BPPV). Vestibular Neuronitis. Acoustic Neuroma
- E. NECK AND SALIVARY GLANDS BASICS
1. CLINICAL ANATOMY
  2. CLINICAL EXAMINATION
  3. INFLAMMATORY DISORDERS: Infectious inflammatory disorders: Acute suppurative sialadenitis. Chronic sialadenitis. Mumps. HIV. Granulomatous disorders. Non-infectious inflammatory disorders. Sjogren syndrome. Sarcoidosis
  4. OBSTRUCTIVE DISORDERS: Sialolithiasis
  5. SALIVARY GLANDS TUMORS: benign and malignant tumors

**References:**

1. S. Pop: *ENT Basics*, Editura Casa Cărții de Știință, Cluj-Napoca 2011
2. Alma Maniu, S. Pop, Magdalena Chirila, Violeta Necula: *Caiet de lucrări practice în ORL*, Editura Medicală Universitară „Iuliu Hațieganu” Cluj-Napoca, 2005
3. B.J. Bingham, M. Hawke, P. Kwok: *Atlas of clinical otolaryngology*, Mosby, 1992
4. Coordonator Conf. Dr. Magdalena Chirilă, *Manopere esențiale în urgențele ORL cu risc vital* Editura Roseco, 2017
5. Mirali S, Seneviratne A (ed). *Toronto Notes 2020*. 36th Edition. Toronto Notes for Medical Students, Inc

**Evaluation:**

- Written exam                      60%
- Practical exam                      40%

## MEDICAL ONCOLOGY. RADIOTHERAPY – 4 CREDITS

### A. MEDICAL ONCOLOGY.

<b>Study domain</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course</b>	<b>Oncology</b>
<b>Discipline holder</b>	<b>Prof. Tudor Ciuleanu, MD, PhD</b> <b>Prof. Cainap Calin, MD, PhD</b>
<b>Department</b>	<b>Oncology</b>
<b>Discipline</b>	<b>Medical Oncology</b>
<b>Course code</b>	<b>MED5208EN</b>

Semester	Courses Type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours/ week								
		L	PA	CI	L	PA	CI						
II	Compulsory	1	-	1	14	-	14	22	50	2	Written+practical exam		

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Anatomy, Physiology, Pathophysiology, Morphopathology, Medical Semiology, Internal Medicine, Surgery, Clinical Pharmacology, Hematology

#### **General objectives:**

At the end of the course the students will be able to integrate the theoretical notions related to the oncological pathology into clinical practice by identifying the needs and the correct application of the specific therapeutic and palliative methods and of oncological patient.

#### **Specific objectives:**

At the end of the course students will be able to:

- Analyze the socio-economic impact of cancer at population level
- Synthesize and exemplify the exogenous and endogenous factors of cancer etiology as well as primary, secondary, tertiary prevention methods.
- Be aware of the oncology screening guidelines, application methodology and the necessary elements to direct oncological patients to genetic counseling if appropriate.

- Know basics of direct and indirect signs of suspected malignancy, confirmation of malignancy, investigations necessary for staging and patient initial work-up in different tumor localizations
- Know the common acute and chronic toxicities (neutropenia, nausea/vomiting, alopecia, extravasation, etc.) specific to a chemotherapy regimen, hormone therapy, targeted therapy, and know the principles to combat / prevent them
- Correctly recognize acute and / or delayed oncological treatment adverse events and know the necessary measures to combat / prevent them
- To know the types of pain, methods of qualitative and quantitative assessment of pain, indications of different stages of pain drugs and adjuvant drugs
- To diagnose an oncological emergency
- To acquire knowledge about the particularities of the terminal oncologic patient and principles of palliative care.

**Course content:**

1. Epidemiology and etiology of cancer. Therapy of pain.
2. Cancerogenesis. Tumoral phenotyp and tumoral cell.
3. Treatments methods in oncology. Chemotherapy and hormonotherapy.
4. Treatments methods in oncology. Biological treatments. Principles of multidisciplinary treatments.
5. Enteral and parental nutritio in oncology.
6. Paliative care and communication with oncological patient.
7. Clinical trials in oncology.

**Practical activities:**

1. Generalitis
2. Diagnosis of malignant adenopathy. Head and neck cancers.
3. Lung Cancer
4. Breast Cancer
5. Female genital cancers.
6. Digestive cancers
7. Male genital cancers and urological cancers
8. Bone and soft tissue sarcoma
9. Brain tumors
10. Final review. Practical cases.

**Bibliography:**

1. Nagy V. (sub redactia). *Principii de Cancerologie Generala*. Editura Medicala Universitara „Iuliu Hațieganu” Cluj, 2007
2. Nagy V. (sub redactia). *Propedeutică Oncologică*. Editura Medicala Universitara „Iuliu Hațieganu” Cluj, 2008

3. Ghilezan N. (sub redactia). *Oncologie generală*. Editura Medicală, București, 1992
4. Courses of the discipline held at the students' series during the study year.
5. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc

**Evaluation:**

- Written exam                      50%
- Practical exam                      50%

## B. RADIOTHERAPY

<b>Study domain</b>	<b>Health</b>
<b>Study program</b>	<b>Medicine</b>
<b>Course</b>	<b>Oncology</b>
<b>Discipline holder</b>	<b>Prof. Gabriel Kacsó, MD, PhD</b> <b>Lecturer Zolt Fekete, MD, PhD</b> <b>Asist. Prof. Patricia Ignat, MD, PhD</b> <b>Asist. Prof. Sebastian Curcean, MD, PhD</b>
<b>Department</b>	<b>Oncology</b>
<b>Discipline</b>	<b>Oncology - Radiotherapy</b>
<b>Course code</b>	<b>MED5208EN</b>

Semester	Courses Type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours/ week								
		L	PA	CI	L	PA	CI						
II	Compulsory	1	-	2	7	-	14	29	50	2	Written + practical exam		

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Anatomy, Pathophysiology, Morphopatology, Imaging, Medical research methodology

### General objective:

By the end of the course, students will be able to correctly specify the full diagnosis and treatment for oncological patients.

### Specific objectives:

At the end of the module students will be able to

- analyze the socio-economic impact of cancer at population level
- exemplify exogenous and endogenous risk factors for cancer
- differentiate the methods of primary, secondary and tertiary prevention for specific cancers (breast, colorectal, cervix etc)
- make recommendations for lifestyle changes that can decrease the risk of cancer (breast, lung, skin etc)
- identify direct/indirect signs of suspicion ; elaborate a complete diagnostic plan (biopsy, staging, performance status)
- prioritize investigations according to utility, invasiveness, cost
- plan post treatment follow-up, justify necessary examinations

- evaluate acute and late toxicities of radiotherapy ; recommend measures to prevent/treat specific toxicities
- justify the use of radiotherapy for specific cases
- explain how radiotherapy is administered : total dose, number of fraction, total treatment time, acute and late toxicities in order to obtain the informed consent from the patient
- understand the rationale for multidisciplinary approach in cancer treatment
- diagnose oncologic emergencies
- evaluate qualitatively and quantitatively chronic pain and prescribe pain medication and adjuvants for specific cancers
- critically evaluate literature information
- integrate ethics principles towards the oncologic patient (respect, empathy, confidentiality).

**Course content:**

1. Tumour precursors and risk groups. Cancer prevention
2. Malignancy diagnosis. Treatment decision. Diagnostic work-up. Response assessment.
3. Treatment options: Surgery and radiotherapy. Treatment associations.
4. Oncological emergencies and pain management.
5. Palliative radiotherapy. RT in benign conditions.
6. Management of radiotherapy related toxicities.
7. Special radiotherapy techniques.

**Practical activities:**

1. General aspects. Specifics of the clinical examination of oncological patients. Lymphadenopathies. Head and neck cancers- general aspects, radiotherapy
2. Lung cancer- general aspects, radiotherapy
3. Gynaecologic malignancies- general aspects, radiotherapy
4. Gastrointestinal malignancies- general aspects, radiotherapy
5. Genito-urinary malignancies- general aspects, radiotherapy
6. Breast cancer- general aspects, radiotherapy
7. CNS malignancies, bone and soft tissue sarcomas- general aspects, radiotherapy

**Bibliography:**

1. Kacsó G. (Editor). CANCER. Principles and practice of General Oncology. Editura Medicala Universitara „Iuliu Hatieganu” Cluj, 2009

2. Halperin, Edward C., Luther W. Brady, David E Wazer, and Carlos A. Perez. Perez and Brady's Principles and Practice of Radiation Oncology. 7th edition. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2018
3. DeVita, Vincent T., Jr., Theodore S. Lawrence, and Steven A. Rosenberg. Devita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology. 11th edition. Philadelphia: Wolters Kluwer, 2018.
4. Nagy V (sub redactia). Propedeutica Oncologica. Editura Medicala Universitara „Iuliu Hatieganu” Cluj, 2008
5. AJCC Cancer Staging Handbook, 8th ED, Springer, New York Heidelberg London, 2017
6. Chao CKS, Perez CA, Bardy LW. Radiation Oncology Management Decisions, 4th ED. LWW Philadelphia, 2018

**Evaluation:**

- Written exam                      50%
- Practical exam                      50%

## RHEUMATOLOGY AND MEDICAL REHABILITATION – 4 CREDITS

### A. RHEUMATOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Rheumatology</b>
<b>Course coordinator:</b>	<b>Lecturer Muntean Laura, MD, PhD</b>
<b>Department:</b>	<b>Medical Specialties</b>
<b>Discipline:</b>	<b>Rheumatology</b>
<b>Course code:</b>	<b>MED5209EN</b>

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		Hours/week			Hours/semester						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	2	14	-	14	22	50	2	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

#### Pre-requisites:

- Anatomy, Physiology, Pathophysiology, Medical Semiology, Internal Medicine year 4, Clinical Pharmacology

#### General objectives:

- To know the major rheumatic diseases and recognize the individual and society burden of these diseases
- To be able to take a relevant history in the knowledge of the characteristics of the major rheumatic diseases
  - To be able to identify, characterize and differentiate the major rheumatic syndromes (polyarthritis, monoarthritis, oligoarthritis, generalized pain, regional pain)
  - To characterize the main types and joint patterns of the major rheumatic diseases
  - To recognize rheumatic diseases which should be referred directly to a rheumatologist for urgent specialist assessment
  - To demonstrate the ability to distinguish arthritis from soft tissue non articular syndromes, as well as inflammatory arthritis from degenerative diseases, through patient inquiry, examination and limited investigation
- To demonstrate a basic understanding in the indications for and the interpretation of results from laboratory tests to establish the diagnosis of

rheumatologic emergencies (acute-phase reactants, immunological tests, musculoskeletal imaging methods, etc)

- To construct an appropriate differential diagnosis for a patient presented with rheumatologic diseases

To demonstrate a basic understanding of the major indications, adverse effects and contraindications of drugs commonly used in the management of rheumatic conditions.

### **Specific objectives:**

#### **Lecture 1. Introduction**

- What is rheumatology? The principles of history and physical examination of the musculoskeletal system
- To make an appropriate evaluation of the musculoskeletal pain (acute vs chronic, regional vs. generalized, intraarticular vs periarticular, inflammatory vs. mechanical pain)
- To understand the impact of a chronic musculoskeletal condition on an individual and their families and on society, due to impairment of function, limitation of activities, and restriction of participation (disability and handicap)
- To demonstrate the ability to construct To understand the impact of a chronic musculoskeletal condition on an individual and their families and on society, due to impairment of function, limitation of activities, and restriction of participation (disability and handicap)
- To make a differential diagnosis in patients presenting with regional pain syndromes
- To make an appropriate evaluation through inquiry, examination and limited investigation and construct a positive diagnosis for a patient presenting with chronic generalized pain (fibromyalgia)
- To be able to explain the available management strategies (nonpharmacologic and pharmacologic) to a fibromyalgia patient, and to establish an appropriate management plan, as a shared decision between patient and physician.

#### **Lecture 2. Polyarthritis and Rheumatoid arthritis (RA)**

- To understand the appropriate approach to a patient with polyarthritis and to be able to differentiate RA from other poly-articular diseases (diagnostic algorithm for patients with polyarthritis)
- To enumerate and hierarchize the main differential diagnosis in patient with polyarthritis
- To be able to identify synovitis, tenosynovitis, deformities/joint instability, subcutaneous nodules, and the signs of compressive neuropathy, as a part of general examination of extremities in a patient with RA
- To be able to identify the extra-articular manifestations in RA

- To demonstrate an appropriate use and interpretation of laboratory tests (acute-phase reactants, rheumatoid factor, anti-cyclic citrullinated peptides antibodies - ACPA) and relevant imaging methods (musculoskeletal ultrasound, standard X-ray, MRI examination) for diagnosis and assessment of RA
- To understand the principles of monitoring disease activity and functional capacity and to use appropriately the disease activity scores in the assessment of patients with RA
- To identify correctly the benefit/risk profile of the drugs commonly used in the management of patients with RA (DMARDs - *Disease-modifying antirheumatic drugs*, biologic agents, non-steroidal anti-inflammatory drugs, corticosteroids)

**Lecture 3.** Oligoarthritis, Low back pain, Spondylarthritis (SpA)

- To identify patients with oligoarthritis to hierarchize the main differential diagnosis and to construct an appropriate investigation strategy (diagnostic algorithm for patients with oligoarthritis)
- To be able to collect and interpret appropriate clinical data and to construct a positive and differential diagnosis for a patient presenting with low back pain
- To demonstrate an appropriate use and interpretation of laboratory tests and relevant imaging methods for diagnosis of patients with chronic low back pain
- To understand the unifying concept of SpA, to know and identify articular and extra-articular manifestations that are associated with SpA
- To discuss the relationship between the genetic and environmental factors implicated in the pathogenesis of SpA
- To be able to propose a strategy for early diagnosing ankylosing spondylitis
- To construct an appropriate positive diagnosis through patient inquiry, examination and investigations for the patient with ankylosing spondylitis, psoriatic arthritis, reactive arthritis and enteral arthritis
- To be able of outlining the appropriate principles of management according to the clinical presentation and severity of the disease, in patients with ankylosing spondylitis, psoriatic arthritis, reactive arthritis and enteral arthritis

**Lecture 4.** Monoarthritis. Osteoarthritis. Crystal deposition diseases

- To enumerate and hierarchize the main differential diagnosis and to construct an appropriate investigation strategy in patients with monoarthritis (diagnostic algorithm for patients with monoarthritis)
- To recognize the emergencies associated to monoarthritis, including septic arthritis and rupture of a popliteal cyst

- To know the principles and interpretation of results of synovial fluid analysis in patients presenting with monoarthritis
- To construct an appropriate positive diagnosis through patient inquiry, examination and investigations for the patient with crystal deposition arthritis (gout, calcium pyrophosphate deposition disease, etc)
- To demonstrate the ability to construct and implement an appropriate treatment plan for the care of a patient with crystal deposition arthritis, according to the clinical presentation, disease course and comorbidities
- To be able to perform a proper examination of knee joint: to identify knee effusion, misalignment, knee stability, crepitations and popliteal cyst
- To apply knowledge of clinical pharmacology and benefit/risk profile to selection and use of nonsteroidal anti-inflammatory drugs in old patients presenting with osteoarthritis.

**Lecture 5.** Is this a connective tissue disease? Identification of systemic rheumatic diseases. Systemic lupus erythematosus (SLE). Antiphospholipid antibody syndrome (APS)

- To discuss the main mechanisms of autoimmunity and immune inflammation, including the role of genetic and hormonal factors in the pathogenesis of SLE
- To demonstrate an appropriate use and interpretation of immunologic tests, including antinuclear antibodies (ANA) and antiphospholipid antibodies
- To understand the utility and limits of classification criteria in SLE
- To know and identify clinical manifestations that are associated with SLE
- To know and identify possible complication and common causes of death in patients with SLE
- To recognize the high risk of cardiovascular diseases and early atherosclerosis in patients with SLE
- To know the major indications, adverse effects, and contraindications of drugs commonly used in the management of lupus patients
- To be able to evaluate correctly the indications for and the risks and benefits of corticosteroid treatment in patients with SLE
- To be able of outlining the appropriate treatment plan with immunosupresor drugs (including corticosteroid-sparing drugs) according to the clinical presentation and severity of the disease in patients with SLE
- To know and identify clinical manifestations and appropriate tests for the screening of APS

**Lecture 6.** Is this a connective tissue disease? Identification of systemic rheumatic diseases. Systemic autoimmune rheumatic diseases: systemic scleroderma, inflammatory myopathies, Sjogren syndrome, recurrent chondritis, mixed connective tissue disease, etc

- To recognize Raynaud phenomenon and to be able to differentiate between primary and secondary Raynaud phenomenon through clinical examination, antinuclear antibody test and capillaroscopy
- To know the classification criteria and relevant clinical manifestations associated with limited and diffuse systemic scleroderma
- To understand and know the importance of monitoring visceral involvement in systemic scleroderma, through clinical examination and investigations
- To be able of outlining the appropriate treatment plan according to the clinical presentation, visceral involvement an severity of the disease in patients with systemic scleroderma
- To know and identify clinical manifestations and relevant clinical associations in patients with dermatomyositis/polymyositis
- To explain the benefits and risks of the drugs commonly used in the management of patients with inflammatory myopathies - mainly corticosteroids, but also other immunosupresors
- To know and identify clinical manifestations, associated comorbidites and complications related to Sjogren syndrome
- To know rare diseases that has to be differentiated from other systemic connective tissue diseases (recurrent polychondritis, Behcet disease, mixed connective tissue disease)

#### **Lecture 7. Systemic vasculitis**

- To understand the basic pathogenic mechanisms in systemic vasculitis
- To know current classification and terminology of this heterogeneous group of diseases
- To know and identify clinical manifestations relevant for the systemic vasculitis
- To be able to recognize the emergencies associated to gigantocellular arteritis and to establish an appropriate management plan
- To demonstrate an appropriate use and interpretation of paraclinical tests for the positive and differential diagnosis of systemic vasculitis (antineutrophil cytoplasmic antibodies – ANCA, imagistic tests, biopsy)
- To be able of outlining the appropriate treatment plan with immunosupresor drugs in patients with systemic vasculitis
- To discuss integrated clinical cases and quizzes, with the evaluation of the clinical skills acquired.

#### **Course content:**

1. Introduction – what is Rheumatology? The principles of history and physical examination of the musculoskeletal system
2. Polyarthritits and Rheumatoid arthritis (RA)
3. Oligoarthritits, Low back pain, Spondylarthritits (SpA)

4. Monoarthritis. Osteoarthritis. Crystal deposition diseases
5. Is this a connective tissue disease? Identification of systemic rheumatic diseases. Systemic lupus erythematosus (SLE). Antiphospholipid antibody syndrome (APS)
6. Is this a connective tissue disease? Identification of systemic rheumatic diseases. Systemic autoimmune rheumatic diseases: systemic scleroderma, inflammatory myopathies, Sjogren syndrome, recurrent polychondritis, mixed connective tissue disease, etc
7. Systemic vasculitis.

**Practical activities:**

1. History taking - relevant history with the knowledge of the characteristics of musculoskeletal diseases. Assess and describe subcutaneous nodes. Assess and describe characteristic facies in rheumatologic diseases. Assess and describe dermatologic lesions characteristic in rheumatologic diseases
2. Detect the difference between bony and soft tissue swelling. Detect synovitis. Detect an effusion at the knee – demonstrate the patellar tap.
3. Elicit temperature around a joint. Palpate for tenderness around and over a joint. Recognize a joint subluxation.
4. Screening examination of the musculoskeletal system (*GALS - Gait, Arms, Leg, Spine*) in accordance with European recommendations.
5. Regional musculoskeletal examination of the hands. Recognize and describe the characteristic joint modifications in advanced rheumatoid arthritis and psoriatic arthritis. Recognize Bouchard's and Heberden's nodes. Perform Gaensslen test. Detect synovitis of the hands. Make a functional assessment of the hand – assess power grip and pincer grip.
6. Perform regional examination of the knee. Recognize *varus* and *valgus* deformities of the knee. Detect knee crepitations. Detect the difference between bony and soft tissue swelling.
7. Perform regional examination of the back. Recognize spine deformities. Detect muscle contraction. Assess spine mobility. Perform and interpret Schober's test. Perform and interpret straight leg raise test (Lasegue's test)

**References:**

1. Simona Rednic. *Reumatologie clinică – ghid de studiu*. Editura Medicală Universitară Iuliu Hațieganu, Cluj-Napoca, 2018
2. Mirali S, Seneviratne A (ed). *Toronto Notes 2016*. 36th Edition. Toronto Notes for Medical Students, Inc
3. Jose Da Silva and Anthony Woolf. *Rheumatology in practice*, Springer Verlag, London, 2010
4. Bulstrode Christopher. *The musculoskeletal system at a glance*. Blackwell Publishing, Oxford, 2007

5. Walji, Anil H. *Musculoskeletal system. Crash Course*. Mosby, Inc, Philadelphia, 2006
6. Stone JH. *A clinician's pearls and myths in rheumatology*, Springer, Heidelberg, 2009
7. Klippel JH. *Primer on rheumatic diseases*, Springer New York, 2008

**Evaluation:** Complex exam together with Medical Rehabilitation specialty

- Written exam                      50%
- Practical exam                      50%

## B. MEDICAL REHABILITATION

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Medical rehabilitation  
**Course coordinator:** Lecturer Irsay Laszlo, MD, PhD  
 Lecturer Ileana Monica Borda, MD, PhD  
 Lecturer Viorela Ciortea, MD, PhD  
**Department:** Medical Specialties  
**Discipline:** Medical rehabilitation  
**Course code:** MED5209EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/semester						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	2	14	-	14	32	60	2	Written exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Anatomy of the locomotory system. Semiology. Methodology of scientific research

### General objectives:

At the end of the module students will be able to correctly manage the medical rehabilitation programs in patients with rheumatological, neurological, orthopedic- posttraumatic, cardiological, respiratory diseases.

### Specific objectives:

Definition of basic concepts in the field of medical rehabilitation.  
 Importance and reasons for using rehab techniques in medical practice.  
 Knowledge of medical rehabilitation techniques, physiotherapy methods and applicability in everyday medical practice.

### Course content:

1. Title: Introductory course. Definitions. Prescribing principles. Indications and contraindications. General examination of the locomotor system. Assessment of disability, definition of medical rehabilitation: rehabilitation team, principles for prescribing the rehabilitation program, methods of medical rehabilitation, indications of medical rehabilitation, major contraindications, general examination of the locomotor system, assessment of the type and degree of disability

## 2. Title: Natural Physical Agents

Mineral waters: definition, conditions for water to be considered mineral water, mode of action of mineral waters, classification of mineral waters, the physical and chemical effects of mineral waters, the main types of mineral waters and the therapeutic indications (cold and warm oligomineral, carbonated, alkaline, salted, sulphurous)

Medical climatology: definition, characteristics of a climate, types of bioclimate, microclimates (salt mines, urban climatopathology) - characteristics, effects and therapeutic indications / harmful effects

Peloids / Muds: definition, types of peloids (sapropelic, peat, spring), physical properties, biological properties, application techniques, therapeutic indications

## 3. Title: Artificial physical agents

Electrotherapy: definition, classification, low frequency currents (types, effects, therapeutic indications), medium frequency currents (types, effects, therapeutic indications), high frequency currents (types, effects, therapeutic indications), ultrasound therapy, extracorporeal shock wave therapy, magnetic field treatments, phototherapy

Hydrotherapy: the definition of hydrotherapy, physical properties of water, thermoregulation, the main effects of the heat factor, the main effects of the mechanical factor, the main effects of the chemical factor, the action of hydrothermotherapy on the cardiovascular system, the action of hydrothermotherapy on the respiratory system, the action of hydrothermotherapy on muscles, hydrotherapeutic reaction, cure reaction in hydrothermotherapy, the main hydrothermotherapy procedures, thermotherapy, cryotherapy

Medical kinesiology and kinesitherapy: types of muscle contractions, types of exercises, advantages and disadvantages of isotonic and isometric muscle contraction, posture, passive mobilizations, active mobilizations, analytical exercise therapy, water based exercise therapy

Medical massage: definition of medical massage, local effects, general effects, main massage procedures, indications, contraindications, special techniques and indications

New technologies and devices used in rehabilitation, robotics

## 4. Title: Rehabilitation of patients with rheumatologic disorders: definition, goals, features, adapting the medical rehabilitation program to the major types of pathology

## 5. Title: Rehabilitation of patients with neurological disorders: definition, goals, features, adapting the medical rehabilitation program to the major types of pathology

6. Title: Rehabilitation of patients with traumatic and orthopedic diseases: definition, goals, features, adapting the medical rehabilitation program to the major types of pathology

7. Title: Rehabilitation of patients with pulmonary, cardiovascular diseases: definition, goals, features, adapting the medical rehabilitation program to the major types of pathology

**Practical activities:**

Clinical case presentations, physical examination of the locomotory system, rehabilitation protocols, physiotherapy techniques, way of organizing and functioning of the rehabilitation ward and the physiotherapy ward.

**References:**

1. L. Pop, L. Irsay: *Textbook of Physiotherapy*. Ed. Medicală Universitară „Iuliu Hațieganu” – Cluj, 2006
2. L. Irsay, L. Pop: *Textbook of Rheumatological Rehabilitation*. edit. Medicală Universitară „Iuliu Hațieganu” – Cluj, 2006
3. Joel A DeLisa, Bruce M Gans, Nicolas E Walsh et al: *Physical Medicine and Rehabilitation: Principles and Practice*, 2 Vol, edițiile 1998 or 2004
4. Randall L. Braddom: *Physical Medicine and Rehabilitation*. ed 2006
5. Randall L. Braddom: *Medicină Fizică și de Reabilitare*, ediția a IV-a, București, 2015
6. AS Nica: *Recuperare Medicala*. Ed. Universitara “Carol Davila”. edițiile 2002 or 2004
7. M Mihailov, M Cevei: *Recuperare funcțională în boli reumatologice*. Ed Universității din Oradea, 2006
8. Ioan Onac: *Masajul medical*, Editura Universitara “Iuliu Hațieganu”, Cluj-Napoca, 2009
9. Ioan Onac: *Reabilitare medicala: caiete de curs 1*, Editura Medicală Universitară “Iuliu Hațieganu” Cluj-Napoca, 2013
10. Ioan Onac, Monica Borda, Viorela Ciortea, Gabriela Dogaru, Laszlo Irsay, Rodica Ungur - *Reabilitare Medicala*, Editura Medicala Universitara "Iuliu Hațieganu", Cluj-Napoca, 2018
11. Written form of lectures of the Departement/handouts

**Evaluation:**

- Written exam 60%
- Practycal exam 40%

## 6<sup>th</sup> YEAR

### FAMILY MEDICINE

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Family Medicine  
**Course coordinator:** Lecturer Codruța Mărginean, MD, PhD  
Lecturer Aida Puia, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Family Medicine  
**Course code:** MED6101EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours / week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	4	-	6	28	-	42	69	139	5	Written + practical exam

L= lectures; PA= Practical activities; CI= clinical internship

#### Pre-requisites:

- Semiology, Internal medicine 4th year and 5th year, Pediatrics  
Pharmacology 4th year, Methodology of scientific research

#### General objectives:

- Getting the basic theoretical and practical knowledge in the field of primary care medical practice necessary in medical training and useful in future exams.
- Assessing the basic practical skills in clinical judgment, diagnosis and disease management
- Getting ability to design preventive medicine interventions, health promotion campaigns

#### Specific objectives:

- Family physician's tasks
- Theoretical and practical knowledge assessment, regarding health promotion, early risk factors identification, early diagnosis, chronic diseases management (comprehensive history, efficient physical exam)
- Primary and secondary prophylaxis'principles
- Selection and interpretation of diagnostic procedures (appropriate and gradual use of laboratory tests)

- Acquiring the knowledge necessary for the diagnosis and treatment in primary care(counseling regarding the diet, psychological, social and physical stress, recommendations for lifestyle changes)
- Acute and chronic disease treatment, side effects
- Complementary therapies principles
- Iatrogenic pathology-diagnosis errors.
- Therapeutic particularities in geriatrics
  - Acquiring the knowledge and skills for interventions in palliative care and home care.

**Course content:**

1. Family medicine (FM) - definitions, content. Differences between family medicine and other specialties. Particularities of consultation, diagnosis and treatment in family medicine
2. The place of FM in the Health Insurance System. Basic, minimal and optional medical services packages
3. Preventive medical services for prevalent diseases. Assessment of the asymptomatic child and adult by the family doctor
4. Vaccinations in the family doctor's office: catagraphy, mobilization, vaccination practice, combating the refusal to vaccinate
5. Child Care in family medicine
6. Child fever: causes, diagnosis and treatment principles in family practice
7. Thoracic pain diagnosis algorithms and treatment principles in family medicine
8. The attitude of the family doctor towards a dyspneic patient
9. Adult fever: causes, diagnosis and treatment principles
10. Chronic cough-evaluation and treatment in family practice
11. Hepato-splenomegaly syndrome: causes, diagnosis and treatment principles
12. Adult jaundice: causes, diagnosis and treatment principles
12. Evaluation and treatment of the patient with nausea and vomiting
13. Evaluation of the patient with unintentional weight loss
14. Joint manifestations in various diseases in family practice
15. Pain in extremities- diagnostic algorithm and treatment
16. Home visit of family doctor: advantages, disadvantages.

**Practical activities:**

1. Carry out, record and interpret examinations of balance in children and adults of different ages and present recommendations on the identified risk of disease
2. Apply risk reduction strategies by: screening, early detection, immunizations and counseling

3. To acquire communication skills with the patient, to record the medical history
4. To take and register the physical examination
5. To apply the clinical thinking in the interpretation of data from the anamnesis and objective examination, formulating the clinical diagnosis
6. To use appropriate means of paraclinical investigation
7. To elaborate and apply a treatment and monitoring plan for the most common conditions in the FM
8. To participate in pregnancy monitoring and risk identification
9. To interpret ecg, laboratory tests
10. To participate in the selection and vaccination of children in vaccination campaigns
11. To know the objectives of the newborn's visit
12. Know the rules of prescribing the electronic prescription
13. To complete specific medical documents of the Ministry of Health
14. To develop home care programs for chronic patients.

**References:**

1. Buzoianu Anca, Mureșan Daniel, Mira Florea, Claudia Gherman, Sorin Man, et al. – *Caiet de practică medicală de specialitate pentru studenții facultății de medicină*, Cluj-Napoca, 2015
2. Simon C., Everit H. *Oxford Book of general practice*, Oxford University Press, Fifth edition, June 2020
3. Sara Mirali, Ayesh Seneviratne. *Essential Med Notes 2020: Comprehensive Medical Reference and Review*, 36th Edition, Thieme Medical Publishers, Incorporated, Jan 2020
4. Centers for Disease Control and Prevention: *Vaccine Storage and Handling. Recommendations and Guidelines*.  
<http://www.cdc.gov/vaccines/recs/storage/>
5. Mindy A. Smith, Leslie A. Shimp, Sarina Schrager. *Family Medicine: Ambulatory Care and Prevention*, 6<sup>th</sup> edition, 2017, (Lange Clinical Manuals)
6. Rakel R.E, Rakel D. P. *Textbook of Family Medicine*, 9<sup>th</sup> Edition, Elsevier Saunders 2016.

**Evaluation:**

- Written exam                      50%
- Practical exam                      50%

## SPECIAL EPIDEMIOLOGY AND HEALTHCARE ASSOCIATED INFECTIONS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Special epidemiology and healthcare associated infections  
**Course coordinator:** Lecturer Dr. Radu-Tudor Coman, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Epidemiology  
**Course code:** MED6102EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours / sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	2	-	14	14	-	32	60	2	Written exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** -

### General objectives:

At the end of the course, the students will integrate the notions of epidemiology with the clinical ones in order to promote health and prevent diseases in the community and in medical services.

### Specific objectives:

At the end of the course students will possess the skills required to:

- explain the interrelationship between risk, environmental and host factors in the determinism of infectious and chronic diseases;
- integrate the particularities of the epidemiology of infectious diseases in order to prevent and control diseases caused by infectious agents;
- apply the immunoprophylaxis principles in the population and in groups of people at high risk for the acquisition and / or severity of infections;
- integrate the notions of the epidemiology of healthcare associated infections in the practical and effective approach of prophylaxis and control measures;
- use chemoprophylaxis judiciously in exogenous and endogenous infections;
- apply standard and transmission-based precautions effectively

**Course content:**

1. Classification of infectious diseases by transmission. Epidemiology of respiratory tract infections Influenza, an important public health issue, epidemiology, prophylaxis and control. Epidemiology of streptococcal infections, prophylaxis and control measures.
2. COVID-19 pandemic - SARS-CoV-2 virus, transmission, frequency and severity, prophylaxis measures in the community and medical units, SARS-CoV-2 vaccines.
3. The main epidemiological aspects of digestive tract infections. Etiopathogenetic classification, population manifestations in acute diarrheal diseases, their prophylaxis and control. Cholera - epidemiology, prophylaxis and control.
4. Acute viral diarrhea - childhood disease preventable by general and specific measures. Food poisoning, etiopathogenetic classification - epidemic outbreaks, prevention and control measures. *Clostridioides difficile* enterocolitis - infection associated with healthcare, prophylaxis and control.
5. Definitions and specific epidemiological indicators used in the surveillance of healthcare associated infections - individual, epidemiological and economic importance. Epidemiological conditioning and characteristics of healthcare associated infections.
6. Measures to prevent and control the main types of healthcare associated infections associated: urinary, respiratory, bacteriemic and surgical wound.
7. The main epidemiological features and community importance of acute viral hepatitis. The epidemiological process, population manifestation - prophylaxis and control of viral hepatitis A, E, B and C.
8. Population manifestation of human immunodeficiency virus (HIV) infection in the world and in Romania. Epidemiological factors conditioning the epidemiological process in HIV infection. Strategies for the prevention and control of HIV infection.
9. Methods of molecular epidemiology for the identification of biomarkers, their use for the measurement of environmental exposures, individual susceptibility assessment and in disease diagnosis. Integration of the notions of molecular biology with the epidemiological methodology in order to increase the validity of descriptive and analytical epidemiological studies.
10. Molecular epidemiology with applicability in infectious diseases, cancers and other diseases. Integrating the concept of personalized medicine.
11. Behavioral epidemiology - lifestyle, preventable behavioral precursors of deaths in population strategies of primary and secondary prophylaxis.
12. The main behavioral risk factors, strategies and means of prevention and control of smoking, excessive consumption of alcohol and psychoactive substances.
13. Cardiovascular diseases, morbidity and mortality patterns of cardiovascular diseases in developed and developing countries. The impact of

cardiovascular diseases in Romania, the most important cause of morbidity and mortality.

14. Modifiable and non-modifiable causal and risk factors in cardiovascular pathology.

The main measures of primary prophylaxis of cardiovascular diseases based on population strategy and increased individual risk.

**Practical activities:**

1. Characteristics of the prophylactic anti-epidemic activity adopted in the medical care in the ambulatory and hospital units

2. Characteristics of combative anti-epidemic activity in individual situations and in epidemic outbreaks. Case studies

3. Active and passive immunoprophylaxis with presentation of individual and population benefits

4. Passive immunoprophylaxis - indications, method of administration and adverse reactions of passive immunoprophylaxis - case study

5. The main types of vaccines recommended in the National Immunization Program in Romania and the European Union

6. Immunizations of adults and other categories with professional, behavioral or medical conditions

7. Vaccine efficiency and population immunity as a consequence of immunoprophylaxis activities at community level

8. Contraindications and adverse reactions of vaccinations, the importance of these activities in primary health care

9. Chemoprophylaxis - individual and group recommendations for exogenous monoetiological infections

10. Chemoprophylaxis - individualized recommendations for exogenous or endogenous plurietiological infections, evolving applications dependent on evidence-based medicine

11. Standard precautions - the main components, hand hygiene, wearing protective gear

12. Additional precautions based on the path of transmission - aerogenous, through drops of secretions, contact - case studies

13. Attitude of case of accident with exposure to blood of medical personnel - hepatitis B and C viruses and human immunodeficiency virus

14. Interpretation and delimitation on concrete cases of infections associated with medical care and those gained in the community.

Limiting the risk of SARS-CoV-2 infection in medical personnel.

**References:**

Epidemiology and Primary Health Care - electronic support of the practical activities for the use of medical students.

1. Bonita R, Beaglehole R, Kjellström T. Basic epidemiology. 2<sup>nd</sup> edition World Health Organization 2006.  
*whqlibdoc.who.int/publications/2006/9241547073\_eng.pdf.*
2. Mandel G.L, Bennett J.E, Dolin R. Principles and Practice of Infectious Disease 8<sup>th</sup> Edition, Churchill Livingstone, London, New York, 2015. ISBN-10: 1455748013
3. Aschengrau A, Seage G. Essentials of Epidemiology in Public Health. 3<sup>rd</sup> Ed. Jones & Bartlett Learning. 2014. ISBN 9781284028911.
4. Merrill R. Introduction to Epidemiology 6<sup>th</sup> Ed. Ed. Jones & Bartlett Learning. 2013. ISBN 9781449665487.
5. Hebel JR, McCarter R. Study guide to Epidemiology and Biostatistics 7<sup>th</sup> Ed. Ed. Jones & Bartlett Learning. 2012. ISBN9781449604752.
6. Fletcher RH, Fletcher SW. Clinical Epidemiology – the Essentials 4<sup>th</sup> Ed., Lippincott Williams &Wilkins, 2012. 9781451144475.
7. Nelson KE, Williams C. Infectious Disease Epidemiology Theory and Practice 3<sup>rd</sup> Ed. Ed. Jones & Bartlett Learning. 2014. ISBN 9781449683795.
8. Rothman K.J., Greenland S, Lash TL. “Modern Epidemiology” 3<sup>rd</sup> ed. Lippincott Williams & Wilkins, Philadelphia 2012, ISBN-13: 978-1451190052.
9. Plotkin SA, Orenstein WA, Offit PA, Edwards KM. Plotkin’s Vaccines. 7th ed., Elsevier 2018. ISBN: 978-0-323-35761-6.
10. European Centre for Disease Prevention and Control. ECDC Available at: <https://www.ecdc.europa.eu/en/home>.
11. Centrul National de Supraveghere si Control al Bolilor Transmisibile (CNCSBT) – Available at: <https://cnscbt.ro/>.
12. Centers for Disease Control and Prevention. Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care. Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2016. <https://www.cdc.gov/oralhealth/infectioncontrol/pdf/safe-care2.pdf>.
13. ORDIN Nr. 1101/2016 privind aprobarea Normelor de supraveghere, prevenire și limitare a infecțiilor asociate asistenței medicale în unitățile sanitare.
14. ORDIN nr. 961/2016 pentru aprobarea Normelor tehnice privind curățarea, dezinfectia și sterilizarea în unitățile sanitare publice și private, tehnicii de lucru și interpretare pentru testele de evaluare a eficienței procedurii de curățenie și dezinfectie, procedurilor recomandate pentru dezinfectia mâinilor, în funcție de nivelul de risc, metodelor de aplicare a dezinfectantelor chimice în funcție de suportul care urmează să fie tratat și a metodelor de evaluare a derulării și eficienței procesului de sterilizare.
15. Ordinul nr. 828/2020 privind măsurile de organizare și desfășurare a activității la nivelul cabinetelor stomatologice, la nivelul unităților sanitare non-COVID și al ambulatoriilor de specialitate pe perioada stării de alertă.
16. ECDC – COVID-19 pandemic. <https://www.ecdc.europa.eu/en/covid-19>

[pandemic.](#)

17. WHO - Coronavirus disease (COVID-19) pandemic.  
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.

**Evaluation:**

- Written exam 60%
- Practical exam 40%

## DERMATOLOGY. ALLERGOLOGY – 6 CREDITS

### A. DERMATOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Dermatology and Venerology</b>
<b>Course coordinator:</b>	<b>Assoc. Prof. Loredana Ungreanu, MD, PhD</b>
<b>Department:</b>	<b>Medical specialties</b>
<b>Discipline:</b>	<b>Dermatology</b>
<b>Course code:</b>	<b>MED6103EN</b>

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	4	-	4	28	-	28	58	114	4	Written + practical exam

L = lectures; PA = practical activities; CI= clinical internship

**Pre-requisites:** Histology, Morphopathology, Physiology, Physiopathology, Semiology, Microbiology, Internal Medicine, General surgery, Rheumatology, Oncology

#### General objectives:

- To recognize the elementary skin lesions
- Running into good theoretical and practical issues in diagnosis and therapeutical management of different skin diseases.

#### Specific objectives:

At the end of the module, the student will be able to:

- Perform the anamnesis and a correct and complete general examination of the patient with skin diseases
- Make the clinical diagnosis
- Formulate an appropriate exploration plan for the confirmation / refutation of each diagnosis he has suspected;
- Integrate clinical data with those of complementary explorations for the formulation of positive diagnosis (positive diagnoses);
- Formulate any differential diagnoses and exclude / confirm with the help of clinical / laboratory elements these diagnoses;
- Specify what are the evolutionary possibilities and the prognosis of the diagnosed condition;

- Formulate a therapeutic plan, specifying the principles and means of treatment, in accordance with the current guidelines and adapted to the patient's particularities;
- Specify the criteria for monitoring the effectiveness of treatment, as well as possible causes of failure and / or complications;
- Correctly assess the conditions reflecting the patient's ability to work and, to the extent necessary, formulate a recovery plan;
- Establish, where appropriate, a follow-up plan;

**Course content:**

Introduction in dermatology

Viral and bacterial infections

Fungal and parasitic infections

Sexually transmitted diseases

Urticaria. Cutaneous drug reactions

Dermatitis. Prurigo

Vasculites. Paniculitis

Autoimmune bullous diseases

Connective tissue diseases

Erythematous-squamous diseases

Hair and pigmentary diseases. Genodermatoses

Diseases of the sebaceous glands. Leg ulcer

Benign skin tumors

Malignant skin tumors

**Practical activity**

1. Clinical diagnosis in dermatology. Elementary lesions
2. Investigations and therapeutic methods in dermatology
3. Skin infections
4. Sexually transmitted diseases. Connective tissue diseases
5. Post-drug skin reactions
6. Eczema. Prurigo. Vasculitis.
7. Viral rash. Erythrodermia
8. Dermatological surgery. Aesthetic dermatology
9. Erythematous-squamous diseases. Pigmentary pathology
10. Autoimmune bullous diseases. Pillar pathology
11. Benign skin tumors.
12. Malignant tumors of the skin
13. Particular locations - oral and genital mucosa
14. Particular locations - folds, scalp, face

**References:**

6. Rachael Morris-Jones. ABC of Dermatology. 7th Edition. Wiley-Blackwell, 2019.
7. Mirali S, Seneviratne A (ed). Toronto Notes 2020. 36th Edition. Toronto Notes for Medical Students, Inc

**Evaluation**

- Written exam                      60%
- Practical exam                    40%

## B. ALLERGOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Allergology  
**Course coordinator:** Lecturer Adriana Ioana Muntean, MD, PhD  
**Departament:** Functional Sciences  
**Discipline:** Immunology and Allergology  
**Course code:** MED6103EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	0,5	-	1	7	-	14	3	24	2	Written+ practical exam

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Immunology, Internal Medicine

### General objectives:

Knowledge, understanding and correct use of the notions of hypersensitivity, allergy

### Specific objectives:

At the end of the course the student will be able to:

- to perform the anamnesis and the correct and complete objective examination of the patients with allergic pathology, to integrate the clinical data with those of the complementary explorations for formulating the positive diagnosis (positive diagnoses), to formulate an adequate exploration plan to confirm / refute each diagnosis suspected
- to formulate the possible differential diagnoses and to exclude / confirm with the help of the clinical / laboratory elements these diagnoses, to specify what are the evolutionary possibilities and the prognosis of the diagnosed disease
- to formulate a therapeutic plan, specifying the principles and means of treatment, in accordance with current guidelines and adapted to the patient's particularities, to specify the criteria for monitoring the effectiveness of treatment, as well as possible causes of failure and / or complications
- Familiarization of students with aspects related to the application of theoretical and practical principles of allergology with emphasis on the use

of diagnostic methods: in vivo testing (skin tests, challenge tests) and in vitro (serological, Fadia-top, Immuno-CAP, ISAC - diagnosis solved by component)

- Knowledge of the main characteristics of diseases with allergic mechanism
- Understand the reasons and mechanisms underlying the tolerance induction response
- Familiarization with the main research directions in the field of allergology
- Exercising the capacity of synthesis and bibliographic documentation

**Course content:**

1. The hypersensitivity response. Types, Allergens.
2. The mechanism of allergic reactions. IgE, cells, mediators
3. Skin allergies. Urticaria, Dermatitis
4. Food allergies. Food, mechanism, symptoms, treatment, oral immunotherapy
5. Drug allergies. Classification, mechanism, examples, diagnosis, treatment, induction of tolerance
6. Anaphylactic shock. Examples, symptoms, diagnosis, treatment, immunotherapy
7. Specific treatment. Allergen immunotherapy. Biological therapies, personalized medicine

**Practical activities:**

1. In vitro investigation methods (ELISA, Immuno-CAP, ISAC etc)
2. In vivo diagnostic methods. Skin testing (prick, patch - epicutaneous, prick-to-prick)
3. In vivo diagnostic methods. Simple blind provocation tests
4. In vivo diagnostic methods. Double-blind provocation tests
5. Case presentations: food allergy
6. Case presentations: drug allergy (diagnosis)
7. Case presentations: drug allergy (treatment)
8. Case presentations: respiratory allergy (rhinitis, conjunctivitis, asthma)
9. Case presentations: skin allergy
10. Case presentations: atopic dermatitis
11. Treatment in allergies
12. Specific topical allergen immunotherapy
13. Specific subcutaneous allergen immunotherapy
14. Biological therapies in allergies

**References:**

1. Middleton's Allergy, 8th Edition, N. Franklin Adkinson Jr. et al, 2014

2. Patterson's Allergic Diseases, Leslie Grammer, 2018
3. Promoting and achieving excellence in the delivery of Integrated Allergy Care: the European Academy of Allergy and Clinical Immunology competencies for allied health professionals working in allergy, Skypala, IJ., et al CTA. 2018 ([eaaci.org/resources/position-papers](http://eaaci.org/resources/position-papers))
4. EAACI position paper on how to classify cutaneous manifestations of drug hypersensitivity
5. Brockow, K., et al. Allergy. 2018, Food Allergy and Anaphylaxis guidelines, Allergen Immunotherapy Guidelines, EAACI guidelines ([eaaci.org/resources/guidelines](http://eaaci.org/resources/guidelines))
6. Toronto notes 2020 (Ed 36)

**Evaluation:**

- |                  |     |
|------------------|-----|
| ▪ Written exam   | 70% |
| ▪ Practical exam | 30% |

## OBSTETRICS-GINECOLOGY, NEONATOLOGY – 10 CREDITS

### A. OBSTETRICS-GINECOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Obstetrics and Gynecology</b>
<b>Course coordinator:</b>	<b>Assoc. Prof. Dr. Răzvan Ciortea, MD, PhD Assoc. Prof. Dr. Andrei Maluțan, MD, PhD</b>
<b>Department:</b>	<b>Mother and child</b>
<b>Discipline:</b>	<b>Obstetrics and Gynecology Clinic II</b>
<b>Course code:</b>	<b>MED6104EN</b>

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		Hours/week			Hours/sem						
		L	PA	CI	L	PA	CI				
I	Compulsory	8	-	20	56	-	140	79	275	10*	Theoretical + practical exam

L=lectures; PA=practical activities; CI=clinical internship

\*with the Discipline Neonatology

#### Pre-requisites: -

#### General objectives:

- At the end of the course, students will be assimilated the theoretical notions referring to the physiological and pathological obstetrics, but also to the gynecological pathology
- At the end of the course, students will be able to apply correctly paraclinical investigations in gynecological and obstetrical practice.

#### Specific objectives:

- At the end of the course students will be able to:
  - Perform a prenatal consultation properly
  - Establish pregnancy diagnosis
  - Proper puerperium monitoring
  - Screening of cervical cancer
- At the end of the course students will:
  - Know the theoretical and practical maneuvers required for delivery assistance
  - Know the maneuvers to be performed in the case of obstetric emergencies

- Be familiar with basic notions in family planning

**Course content:**

1. Clinical Gynecological Examination. Obstetrical clinical examination.
2. Paraclinical examinations in obstetrics and gynecology.
3. Gametogenesis, ovulation, fecundation, egg migration. Morphophysiology of placenta, amniotic fluid, umbilical cord.
4. Diagnosis of pregnancy. Morphological changes of the maternal body during pregnancy.
5. Pregnancy monitoring. Prenatal counseling. High risk pregnancy.
6. Bony pelvis. Term fetus from obstetrical point of view. Fetal accommodation rules in uterus. Attitude, lie, position, presentation, variety of position.
7. Physiology of labor. Birth determinism, clinical stages of birth.
8. Delivery in cephalic presentation. Delivery in other cranial presentations. Delivery in breech presentation.
9. Transverse lie. Multiple pregnancy.
10. Third and Fourth Periods of Delivery - Physiological and pathological aspects. Fetal and maternal trauma.
11. Physiological puerperium. Lactation. Pathological puerperium.
12. Bleeding in the first half of pregnancy: abortion, ectopic pregnancy, gestational trophoblastic disease.
13. Bleeding in the second half of pregnancy: placenta praevia, premature detachment of the normally inserted placenta. Hieremesis gravidarum.
14. Premature rupture of membranes. Premature delivery.
15. Prolonged pregnancy. Artificial induction of labor. Rhessus and ABO isommunization. Diabetes and pregnancy.
16. Distocic labor.
17. Medical and surgical diseases associated with pregnancy.
18. Hypertensive disorders in pregnancy.
19. Acute and chronic fetal distress. Fetal intrauterine growth restriction. Intrauterine death.
20. Women's physiological stages: puberty, menopause. Menstrual flow disorders by excessive bleeding. Menstrual flow disorders by insufficient bleeding.
21. Pathology of the vulva. Pathology of the vagina.
22. Pelvic floor disorders. Stress urinary incontinence.
23. Pathology of the cervix.
24. Pathology of the uterine body: endocervical polyps, uterine fibroids, endometrial cancer. Female genital malformations.
25. Endometriosis. Pelvic inflammatory disease. Dysmenorrhea. Dyspareunia.
26. Conjugal sterility.
27. Ovarian pathology.

## 28. Contraception and family planning.

### **Practical activities:**

1. Gynecological examination
2. Obstetric examination
3. First trimester ultrasound
4. Pelvis
5. Pregnancy at term
6. Birth assistance
7. Laboratory - Obstetrics and Gynecology - current tests
8. Newborn in the birth room
9. Bleeding during 3-4 period of birth
10. Puerperal period
11. Ectopic pregnancy
12. Placenta praevia
13. Preeclampsia
14. Prolonged pregnancy
15. Obstetric ultrasound of 2<sup>nd</sup> trimester
16. Fetal suffering, fetal hypotrophy
17. Ultrasound in gynecology
18. Menopause
19. Primary amenorrhea
20. Menometroragia
21. Genital prolapses
22. Pelvic inflammatory disease
23. Sterility
24. Contraception and family planning
25. Ovarian tumors
26. Uterine fibroma
27. Endometriosis
28. Diagnosis and screening of cervical cancer
29. Clinical activity during the emergency services.

### **References:**

1. Coord: Dan Miħu, Răzvan Ciortea, Andrei Mihai Mălușan. Autori: Doru Diculescu, Cezarin Todea, Renata Nicula, Daria Pop, Cristian Iuhas, Mihaela Oancea, Ciprian Porumb, Radu Mocan-Hognogi, Carmen Bucuri. Gynecology. Ed Medicală Universitară "Iuliu Hașieganu" Cluj-Napoca 2020 ISBN 978-973-693-975-4
2. Coord: Dan Miħu, Răzvan Ciortea, Andrei Mihai Mălușan. Autori: Doru Diculescu, Cezarin Todea, Renata Nicula, Daria Pop, Cristian Iuhas, Mihaela Oancea, Ciprian Porumb, Radu Mocan-Hognogi, Carmen Bucuri,

Virgil Dorca. Physiological obstetrics. Ed Medicală Universitară "Iuliu Hațieganu" Cluj-Napoca 2020 ISBN 978-973-693-977-8

3. Coord: Dan Mișu, Răzvan Ciorțea, Andrei Mihai Măluțan. Autori: Doru Dicuțescu, Cezarin Todea, Renata Nicula, Daria Pop, Cristian Iuhas, Mihaela Oancea, Ciprian Porumb, Radu Mocan-Hognogi, Carmen Bucuri.  
Pathological obstetrics. Ed Medicală Universitară "Iuliu Hațieganu" Cluj-Napoca 2020 ISBN 978-973-693-976-1
4. Toronto Notes 2020
5. F. Gary Cunningham, Kenneth J. Leveno, Steven L. Bloom, Jodi S. Dashe, Catherine Y. Spong, Barbara L. Hoffman, Brian M. Casey and Catherine Y. Spong. Williams Obstetrics 25th ed. 2019. McGraw Hill Professional
6. Barbara L. Hoffman, John O. Schorge, Lisa M. Halvorson, Cherine A. Hamid, Marlene M. Corton, Joseph I. Schaffer. Williams gynecology 4th ed. 2018. McGraw Hill Professional

**Evaluation:**

- |                  |     |
|------------------|-----|
| ▪ Written exam   | 40% |
| ▪ Practical exam | 50% |
| ▪ Neonatology    | 10% |

## B. NEONATOLOGY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Neonatology  
**Course coordinator:** Prof. Gabriela Zaharie, MD, PhD  
 Lecturer Matyas Melinda, MD, PhD  
**Department:** Mother and child  
**Discipline:** Neonatology  
**Course code:** MED6104EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours / semester						
		L	PA	CI	L	PA	CI				
I	Compulsory	0,5	-	0,5	7	-	14	18	39	11*	Written + practical exam

L= lectures; PA=practical activities; CI=clinical internship

\*with the Discipline Obstetrics- Gynecology

### Pre-requisites:

- Pediatrics and Puericulture

### General objectives:

Acquisition of theoretical and practical notions related to healthy newborn, premature newborn and with intrauterine growth restriction as well as theoretical notions related to the main entities of neonatal pathology.

Acquiring the necessary maneuvers needed for neonatal resuscitation.

### Specific objectives:

Acquisition of theoretical notions related to the specific pathology of the newborn:

1. Respiratory distress syndrome
2. Newborn hyperbilirubinemia
3. Neonatal asphyxia
4. Neonatal resuscitation
5. Infectious diseases during the neonatal period
6. Specific conditions and complications of the newborn with intrauterine growth restriction

7. Presentation on mannequins of specific maneuvers used in neonatal resuscitation: positive pressure ventilation, orotracheal intubation, chest compression external , drug administration.
8. Video presentation of neonatology maneuvers.

**Course content:**

1. Newborn at term

Definition, newborn classification, gestational age assesment

Transition and adaptation to extrauterine life

The term newborn clinical aspects

Clinical examination, specific conditions of the newborn

Care of the newborn

Nutrition of the Newborn

2. Neonatal asphyxia

Incidence and relationship with cerebral palsy

Risk factor

Presentation of organs injury in asphyxia

Patterns of brain injury

Diagnosis of neonatal asphyxia

Differential diagnosis of neonatal encephalopathy

Seizures as a manifestation of HIE

Neuroimaging used in HIE

General principles of treatment

Prognostic, brain death, ethics

3. Principles of neonatal resuscitation

Primary and secondary apnea. Reanimation principles, drugs used in neonatal resuscitation

4. Respiratory distress syndrome

Hyaline membrane disease (HMD),

Transient Tachypnea of the Newborn (TTN),

Meconium Aspiration Syndrome (MAS)

5. Hyperbilirubinemia at newborn

Hyperbilirubinemia by Rh incompatibility ( Rhesus disease)

Haemolytic disorder by ABO incompatibility

Hyperbilirubinemia with conjugated bilirubin

6. Intrauterine growth restriction

Intrauterine growth restriction: definition, incidence, fetal development

Etiopathogenesis, classification, diagnosis

Clinical examination, neonatal effects of IUGR

7. Neonatal infections

Colonizing the newborn

Prevention of infection

Risk factors for neonatal infection

Clinical signs of bacterial sepsis and meningitis  
Classification of neonatal infections  
Diagnosis of sepsis  
Principles of treatment in neonatal infection.

**Practical activities:**

1. The clinical observation in neonatology, the particularities of the anamnesis. Organization of the neonatology section. Interpretation of growth curves
2. Physical exam of the newborn. Assessing gestational age
3. Presentation a case of respiratory distress. Presentation of neonatal intensive care equipment
4. Monitoring the newborn in non-intensive therapy. Interpretation of biological parameters in the newborn
5. Presentation of a case of hyperbilirubinemia. Fitting of jaundice in the neonatal period: physiological / pathological.
6. Therapeutic means for neonatal jaundice: equipment, conditions of use, indications, contraindications, care of a child with jaundice
7. Newborn term neonatal resuscitation
8. Premature neonatal resuscitation
9. Presentation of a premature case with the complications of prematurity
10. Acquisition of aseptic and antiseptic measures
11. Presentation of a case with neonatal infection
12. Doe case - complex case: pros and cons in the correct management of the case.

**References:**

1. Gabriela Zaharie, *Neonatology*, Editura Didactica si Pedagogica, R.A. Medicala 2007
2. Coordonator Zaharie G Blaga L, Matyas M., *Noțiuni practice în neonatologie*. Editura Medicală Universitară „Iuliu Hațieganu”, Cluj Napoca. 2016
3. John P. Cloherty, Ann R. Stark *Manual of neonatal care*, Lippincott Raven 2017
4. Tricia Lacy Gomella, Gomella's Neonatology, Management, Procedures ,On call Problems, Diseases, and Drugs, eighth edition, Lange Medical Books, N.York, 2020

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## FORENSIC MEDICINE

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Forensic Medicine  
**Course coordinator:** Lecturer Ștefan Anițan, MD, PhD  
 Lecturer Ovidiu Chiroban, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Forensic Medicine  
**Course code:** MED 6 1 05 EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	3	3	-	21	21	-	33	75	3	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Anatomy, Pathological Anatomy, Pathophysiology, Semiology, Orthopedics, Neurosurgery, Radiology, Psychiatry.

### General objectives:

At the end of the course the students:

- Will be able to understand the basic concept of the subject and its importance.
- Will know the practical aspects of death investigation, forensic pathology, and clinical forensic medicine.
- Will be able to recognize a forensic situation and act in accordance with the legislation.

### Specific objectives:

At the end of the course students will be able:

- To know the types of medico-legal activities
- To examine and document wounds and injuries, both at autopsy and in a clinical setting.
- To establish the 'manner of death', the circumstances surrounding the cause of death, which in most jurisdictions include: nonviolent death and violent death (homicide, suicide or accident)
- To understand the pathological process, injury or disease that directly results in or initiates a series of events which lead to a person's death (also called mechanism of death), such as a bullet wound to the head,

exsanguination due to a stab wound, manual or ligature strangulation, myocardial infarction due to coronary artery disease, etc.)

- To diagnose and manage the cases of poisoning
- To preserve and dispatch specimens in medico-legal/postmortem cases and other concerned materials to the appropriate government agencies for necessary exams.

**Course content:**

1. Definition of Forensic Medicine, definition of terms
2. Thanatology, Definition of death. Stages of terminal state. Types of death – Somatic/Clinical/Cellular, Molecular and Brain death including cortical death and Brainstem death. Suspended animation Moment of death.
3. Signs of death. Cadaveric changes - Body Cooling, Dehydration, Lividity, Rigidity, Autolysis, Putrefaction, Adipocere, Mummification, and Lignification. Estimation of time since death.
4. The medico-legal classification of death. Suspect death and Sudden natural deaths. Causes of Sudden natural deaths
5. Forensic death investigation. Scene Investigation. Forensic Autopsy. Death Certification. Autopsy Report.
6. Traumatology –generalities. Death due to Mechanical Agents. Wounds. Classification of wounds. Description of wounds. Blunt trauma wounds. Wounds caused by pointed and sharp –edged weapons.
7. Head injuries. Skull fractures. Intracranial hemorrhages. Contusion of the brain.
8. Traffic accidents. Road traffic Accidents. Pedestrian. Vehicular Occupants. Train accidents. Plane accidents.
9. Mechanical Asphyxia. Classification. Hanging. Strangulation. Suffocation. Thoraco-abdominal compression. Drowning.
10. Fire arms injuries
11. Fatal Falls from Height
12. Death due to Physical Agents. Fire/Thermal injuries. Death Due to Hypothermia. Electrocutation
13. Death due to Chemical Agents. Generalities. The Ethyl alcohol intoxication. Carbon Monoxide intoxication. Acids and Alkalis intoxication. Cyanide intoxication
14. Medico-legal Sexology – The rape / Sexual offences
15. Battered child syndrome.

**Practical activities:**

1. Tanatology
2. Primary traumatic injuries

3. Mechanical asphyxiation
4. Physical agents
5. Chemical agents
6. Road accident
7. Methodology of forensic expertise. Notions of medical liability.

**Reference:**

1. Perju-Dumbrava Dan – Legal Medicine, Editura Medicala Universitara. 2017
2. Belis V.,-TRATAT DE MEDICINA LEGALA, Bucuresti, 1995
3. Belis Vladimir, Barbarii Ligia--GENETICA JUDICIARA, Ed.Medicala. 2007
4. Dermengiu Dan, MEDICINA LEGALA, C.H.Beck, Bucuresti, 2009
5. Dermengiu Dan, Gorun Daniel. TOXICOLOGIE MEDICO-LEGALA. Ed.Viata Medicala Romaneasca, 2006
6. Dan Dermengiu, Gheorghe Alexandrescu, Medicină Legală prosecturală, Ed Viata Medicală, 2012
7. Perju-Dumbrava Dan, Medicina Legala-suport de specialitate, Ed Chisinau, 2015

**Evaluation:**

- Written exam                      66%
- Practical exam                      34%

## EMERGENCY MEDICINE

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Emergency Medicine</b>
<b>Course coordinator:</b>	<b>Associate professor Adela Golea, MD, PhD</b>
<b>Department:</b>	<b>Surgery</b>
<b>Discipline:</b>	<b>Emergency Medicine</b>
<b>Course code:</b>	<b>MED6106EN</b>

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
I	Compulsory	2	2	-	14	14	-	50	78	2	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship

**Pre-requisites:** Semiology, Pharmacology, General Surgery, Cardiology, Internal Medicine, Radiology, Orthopedics

### General objectives:

At the end of the course the student will be able to know the concept of emergency medical care, triage, primary assessment and to ensure correctly the first practical measures to assist the critically ill patient, in cardio-respiratory arrest, traumatized / burned, intoxicated.

### Specific objectives:

At the end of the course the student will be able to:

1. Describe the concept of emergency medical care, regardless of the area of practice, for any unsystematized clinical picture.
2. To know and be able to implement (put into practice) the concept of triage in case of multiple victims or disasters.
3. To be able to primarily assess a potentially critical patient and to recognize life-threatening situations.
4. Perform basic resuscitation and early defibrillation.
5. To know and apply the basic and advanced life support algorithm in common and special situations, participating in the resuscitation team.
6. To be able to elaborate a first plan of emergency medical assistance of the critical patient: shocked, traumatized / burned, intoxicated regardless of the practice area.

7. To formulate probable diagnoses in an emergency clinical context and to formulate a plan for monitoring, paraclinical evaluation and flexible medical intervention until the patient stabilizes.
8. To know the usefulness of point of care examinations and interdisciplinary team communication for the observance of the concept of "golden hour" in case management in critical emergencies.

**Course content:**

1. Emergency and Disaster Medicine - peculiarities of medical practice. Professional opportunities: interdisciplinary research and development subspecialties. Triage in case of limited resources and disasters
2. ABCDE evaluation of the critical patient. Identification of the critical patient and the first measures of medical assistance for the non-traumatized patient. Working in the emergency team and communicating with other specialties, the patient and the relatives. Communicating negative news.
3. The chain of survival. Basal life support algorithm and DEA.
4. Advanced life support algorithm. Special situations in resuscitation.
5. Basic notions of approaching an accident. ABCDE primary assessment and first emergency measures.
6. Emergency assistance of the shock of unknown etiology. Features traumatic shock.
7. Basic notions of emergency recognition of intoxication. Integration of emergency bedside examinations.

**Practical activities:**

Identifying the degree of triage. Identification of the critical patient by ABCDE evaluation

BLS: practicing the algorithm in clinical scenarios

ALS: the practice of the algorithm for shocking rhythms

ALS: the practice of the algorithm for non-shocking rhythms

ALS: practice of the algorithm for special situations

ABCDE in trauma: CA clearance, cervical collar, bleeding stop, pneumothorax decompression, fracture immobilization

Clinical scenarios with ABCDE evaluation, introduction of SCR identification and BLS / ALS algorithm

**References:**

**Manual:**

1. Initiation course in SMURD 2018 activity

**Summary:**

1. Adam Feather, David Randall, Mona Waterhouse: Kumar and Clark Clinical Medicine, Leonard Azamfirei, Anca Dana Buzoianu, Dan Ionut Gheonea -

coordinators of the Romanian language edition, 10th Edition, 1564 color pages, Hipocrate Publishing House, Bucharest, 2021

2. Mark Levine, William Gilmore, Practical Guide to Emergency Medicine Washington (Lippincott Medical Guides), Adela Golea - coordinator edition in Romanian, 756 pages, Hippocrates Publishing House, Bucharest 2018

3. Judith E. Tintinalli, Emergency Medicine: A Comprehensive Study Guide, 8th, 2017

**Guides of specialized companies (national / international), national guides:**

1. European Resuscitation Guide 2021 - ERC: <http://www.erc.edu>

2. National triage protocol - 2019 (WHO 443/2019)

3. Algorithms for Emergency Medicine approved by the Ministry of Health, 2017. <https://medicinadeurgenta.ro/>

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## PALLIATIVE CARE

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Palliative Care</b>
<b>Course coordinator:</b>	<b>Lecturer Ruxandra-Mioara Râjnoveanu, MD, PhD</b>
<b>Department:</b>	<b>Medicine</b>
<b>Discipline:</b>	<b>Palliative Care</b>
<b>Course Code:</b>	<b>MED6207EN</b>

Sem.	Type of course	Lectures			Practical activities			Individual Study	TOTAL	Credits	Evaluation
		hours/ week			hours / sem / module						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	2	14	-	14	38	66	2	Written + practical exam

L=lectures; PA=Practical Activities; St= stages

**Pre-requisites:** Anatomy, Physiology, Physiopathology, Clinical Biochemistry, Pharmacology, Semiology, Clinical Pharmacology, Intern Medicine, Cardiology, Pneumology, Oncology, Neurology, Psychiatry, Pediatrics, Endocrinology, Diabetes mellitus, nutrition and metabolism diseases, Nephrology

### General objectives:

- Palliative Medicine as an integrated medical discipline.
- To describe and critically discuss the philosophy and practice of palliative care (PC).
- To understand the types, levels and integration of PC services in both adult and child care.
- To work as a team.
- The holistic approach in teamwork in PC, the role of each team member according to each one's expertise, team dynamics, interdisciplinarity.
- Communication with the patient and his family - holistic evaluation - To understand how to holistically evaluate patients and their families in the context of PC.
- Empathic communication and active listening - Understand practical applications and the effect of key communication skills.
- Challenges in communication in the PC field: communication of bad news; breaking the conspiracy of silence.
- Understanding the impact of the disease on the patient with a chronic illness (and his family) on a psycho-social and spiritual level.

- Pain Assessment and Management - Develop clinical skills and competencies in a complete and accurate pain assessment.
- Principles of assessment and management of symptoms commonly encountered in palliative care, using the best evidence-based guidelines and care protocols.
- Terminal status - recognition, evaluation and management of the terminally ill patient.
- Loss and mourning - Understanding the causes and responses to loss and mourning of patients with chronic diseases (and their families).
- Self-care - To understand the emotional impact that patient care has on the health professional.

**Specific objectives:**

At the end of the course the student will be able:

- to recognize and argue the importance of integrating PC with curative therapies for non-oncological and oncological diseases;
- to apply in the daily routine interventions of the basic PC;
- to differentiate between basic and specialized PC;
- to demonstrate the ability to perform a holistic assessment of the palliative patient;
- to describe the role and complementarity of the physician (and other professionals) in the PC team (physiotherapy, occupational therapy, social work, psychology, pastoral care);
- to discuss the different trajectories of non-oncological and oncological diseases;
- to identify and describe the losses faced by patients and their families along the course of the disease; also, for the families after the death of patients;
- to differentiate between loss and mourning, including identifying signs of abnormal or prolonged mourning;
- to demonstrate an empathic understanding of the stress / loss response and the link between adaptation and psychological dysfunction / disorder;
- to understand pain as a multidimensional experience;
- to identify elements of total pain in a clinical assessment of pain;
- to establish the diagnosis of pain;
- to know how to use opioids for moderate and severe pain; know how to combine medications and how to rotate painkillers; know how to minimize side effects;
- to recognize the complexity of pain management, be prepared to monitor pain management outcomes, and address patients' fears about the pain regimen;

- to prescribe appropriate doses, use appropriate forms and routes of administration for cases of pain, including prescription for painful onset;
- to identify the individual and specific characteristics of the way in which the patient communicates, but also of the patient himself;
- to use active listening in different medical situations;
- to describe at least 5 techniques that facilitate active communication and listening;
- to understand and explain the effects of empathy in clinical care;
- to understand the goals of end-of-life care;
- to describe methods and tools for establishing the prognosis, but also their limitations;
- to describe 10 principles of patient management in the last days or hours of life;

**Course content:**

Course 1. Palliative care as an integrated medical discipline. Palliative care in the hospital and community. The disease evolution.

Course 2. Psycho-social care. Spiritual care. Loss and mourning.

Course 3. Pain and total pain in palliative care. Pathophysiology, classification and measurement of pain. Principles of pain treatment. Side effects of opioids and how to manage them.

Course 4. Principles of assessment and management of common symptoms in palliative care using the best care protocols. Emergencies in PC.

Course 5. Empathic communication and active listening.

Basic communication skills in palliative care. Challenges in communication in the field of palliative care - communicating the bad news.

Course 6. Specific aspects of communication: communication with the patient's relatives. Challenges in communication in the field of palliative care - breaking the conspiracy of silence, assertive communication in conflict situations.

Course 7. The terminal status. End-of-life patient care.

**Practical activities:**

PW 1. Type, role, location, team providing basic and specialized PC interventions. Discussing the different evolution of the disease, recognizing the importance of early integration of PC during the disease and the challenges involved in this integration of PC.

PW 2. Work in the palliative care team and team dynamics. Description of expectations and roles within the multidisciplinary team in supporting / providing psychological and social, spiritual assistance.

LP 3. Use of validated tools / scales / applications to assess pain for children and patients, including those with cognitive impairment. Presentation of

analgesic and co-analgesic drugs. Description of how to start opioid treatment in cancer pain and non-oncological conditions: initiation, titration. Special prescription forms.

LP 4. Use a systematic approach (e.g. OPQRSTUV framework) to investigate symptoms when performing a holistic assessment (constipation; diarrhea; nausea / vomiting; anorexia / cachexia; fatigue; oral problems (xerostomia, dysphagia); dyspnea, cough, bedsores), lymphedema, exulcerated tumors, convulsions, delirium, anxiety, depression, insomnia). Emergencies in PC (hypercalcemia, hemorrhage, spinal cord compression, superior vena cava syndrome, etc.)

PW 5. Communication with the patient and his family: holistic evaluation. Bad news communication. The conflict.

PW 6. Specific aspects of communication: communication with the patient's relatives. Planning and moderating a family meeting. Breaking the conspiracy of silence.

PW 7. End-of-life practicalities for patients and families

### References:

1. Twycross RG. Introducing palliative care. Radcliffe Publishing; 2003.
2. Wilcock A. Symptom management in advanced cancer. Radcliffe Publishing; 2001.
3. Cherny NI, Fallon M, Kaasa S, Portenoy RK, Currow D, editors. Oxford textbook of palliative medicine. Oxford University Press, USA; 2015.
4. Hanks G, Cherny NI, Christakis NA, Kaasa S, editors. Oxford textbook of palliative medicine. Oxford university press; 2011 Jul 21
5. Mosoiu D. Prescrierea si utilizarea opioidelor în managementul durerii. ghid practic. Brasov, Lux Libris. 2007
6. Davis, Esther, et al. "Attitudes of palliative care clinical staff toward prolonged grief disorder diagnosis and grief interventions." (2017): 1.
7. Holland JC, Rowland JH. Handbook of psycho-oncology: Psychological care of the patient with cancer. Oxford University Press; 1989.
8. Baile WF, Buckman R, Lenzi R, Gloger G, Beale EA, Kudelka AP. SPIKES—a six-step protocol for delivering bad news: application to the patient with cancer. The oncologist. 2000 Aug;5(4):302-11.
9. Buckman R. S'asseoir pour parler: l'art de communiquer de mauvaises nouvelles aux malades: guide du professionnel de santé. Elsevier Masson; 2001.
10. Saunders C. A personal therapeutic journey. BMJ. 1996 Dec 21;313(7072):1599-601.

### Evaluation:

- Written exam 60%
- Practical exam 40%

## GERIATRICS

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Geriatrics and Gerontology  
**Course coordinator:** Lecturer Valer Donca, MD, PhD  
**Department:** Medicine  
**Discipline:** Geriatrics and Gerontology  
**Course Code:** MED6208EN

Sem.	Type of course	Lectures			Practical activities			Individual Study	TOTAL	Credits	Evaluation
		hours/ week			hours / sem / module						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	2	14	-	14	38	66	2	Written+ practical exam

L=lectures; PA=Practical Activities; St= stages

### Pre-requisites: -

### General objectives:

- Distinction between so-called normal aging and pathological changes of aging
- Avoid both curable pathology interpretation as simple manifestation of aging and the attempt to treat the natural process of aging such as diseases.

### Specific objectives:

- Knowledge of the physiological changes of systems in aging process
- Identification and management of special problems of elderly patients.

### Course content:

1. Biology of aging. Comprehensive geriatric assessment (CGA)
2. Multimorbidity. Frailty
3. Nutrition and weight. Feeding and swallowing.
4. Urinary incontinence. Pressure ulcers and wound care
5. Gait impairment. Falls
6. Delirium
7. Hospital care. Transition of care

### Practical activities:

1. The medical and functional evaluation of the elderly
2. Comprehensive geriatric evaluation

3. Aging of the cardiovascular, respiratory and osteomuscular systems
4. Aging of the urinary tract. Urinary incontinence
5. Nutrition
6. Delirium. Bedsores
7. Instability and falls.

**References:**

1. Lectures - handouts/electronic format
2. Geriatrics Review Syllabus (10th Editions)
3. Dronca Valer, Gerontologie și Geriatrie, Ed. Casa Cărții de Știință, 2008
4. Dronca Valer, Evaluare geriatică, Ed. Colorama, 2020

**Evaluation:**

- |                  |     |
|------------------|-----|
| ▪ Written exam   | 80% |
| ▪ Practical exam | 20% |

## PSYCHIATRY. PEDIATRIC PSYCHIATRY – 7 CREDITS

### A. PSYCHIATRY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Psychiatry  
**Course coordinator:** Prof. Ioana Micluția, MD, PhD  
 Lecturer Cătălina Crișan, MD, PhD  
 Lecturer Ramona Paunescu, MD, PhD  
**Departament:** Neurosciences  
**Discipline:** Psychiatry and pediatric psychiatry  
**Course code:** MED6209EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	6	-	6	42	-	42	109	193	7*	Written + practical exam

L=lectures; PA=practical activities; CI=clinical internship

\*with the Discipline Pediatric psychiatry

**Pre-requisites:** Anatomy and physiology of the SNS, Behavioral sciences, Neurology, Medical Psychology, Psychiatric Semiology, Bases of Medical Communication

#### General objectives:

- At the end of the lecture the students will be able to perform a management therapeutically correct of the patients with mental illnesses

#### Specific objectives:

At the end of the lecture the students will be capable to:

- form diagnosis and clinical assessment abilities
- to apply clinical scales of assessment for a specific syndrome
- to develop advances competences regarding the establishment and maintenance of the therapeutically alliance
- to follow the outcome of the clinical case
- to develop the capacity to adjust the clinical interventions to the patient's needs

-to explain the importance of the age of onset, family history, family and social support, treatment adherence for the evolution and prognosis of psychiatric disorders.

**Course content:**

1. The history of psychiatry-Introductory notions: concepts of health, illness, normality and psychiatric abnormality
2. Aspects of psychiatric semiology
3. Schizophrenia and other psychotic disturbances
4. Mood disorders. Suicide
5. Organic psychiatric disorders (including dementias). Psychiatric disorders with postpartum onset.
6. Alcohol and psychoactive substances related disorders
7. Psychiatric emergencies. The intervention in crisis
8. Neurotic disorders, stress related disorders, somatization disorders
9. Personality disorders
10. Impulses control disorders. Sleep disorders. Eating disorders.
11. Sexuality disorders
12. Pharmacological and other biological therapies in psychiatry.
13. Psychotherapies - definition elements. Main directions and indications
14. Rehabilitation methods for mental patients. Notions of legal expertise. Law related aspects. Assessment of working capacity of patients diagnosed with mental illness.

**Practical activities:**

1. Psychiatric semiology
2. Schizophrenia and other psychotic disorders
3. Disorders of disposition
4. Bipolar affective disorder
5. Organic psychiatric disorders (including dementia)
6. Disorders induced by alcohol consumption
7. Disorders induced by the consumption of psychoactive substances
8. Psychiatric emergencies
9. Neurotic disorders, stress disorders, somatization disorders
10. Personality disorders
11. Impulse control disorders. Sleep disorders
12. Eating disorders
13. Sexuality disorders.

**References:**

1. Ioana Micluția, Cătălina Crișan - Essential in Clinical Psychiatry for Medical Students, Editura Medicală Universitară "Iuliu Hatieganu" Cluj-Napoca, 2017.

2. Miclutia I, Psihiatrie, (2010), Ed. A II-a, Editura Medicală Universitara "Iuliu Hațieganu" Cluj-Napoca, 2010
3. Toronto Notes for Medical Students – Neuroscience/Psychiatry Chapter.
4. Cornelius Katona, Claudia Cooper, Mary Robertson – Psychiatry at a Glance, 6<sup>th</sup> Ed.
5. Philip Xiu, Shreelata Datta, Steven Birrell – Psychiatry Crash Course, 5<sup>th</sup> Ed.
6. Nisha Dogra, Brian Lunn, Stephen Cooper – Psychiatry by then teachers, 2<sup>nd</sup> Ed.

**Evaluation:** (represents 75% of final grade)

- Written exam 50%
- Practical exam 50%

## B. PEDIATRIC PSYCHIATRY

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Child and adolescent psychiatry  
**Course coordinator:** Lector Roxana Sipos, MD, PhD  
**Department:** Neurosciences  
**Discipline:** Psychiatry and Pediatric Psychiatry  
**Course code:** MED6209EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	2	14	-	14	22	50	7*	Written + practical exam

L = lectures; PA = practical activities; CI = clinical internship  
 \*with the Discipline Psychiatry

**Pre-requisites:** Neuroanatomy, Neurophysiology, Medical Psychology, Psychiatric Semiology, Pediatrics, Pediatric Neurology, Clinical Pharmacology

### General objectives:

At the end of the lectures, students will be able to correctly establish the clinical diagnosis and intervention plan for the main psychiatric disorders in children and adolescents.

### Specific objectives:

At the end of the course students will be able to

- understand aspects related to the application of the theoretical and practical principles of pediatric psychiatry
- Correctly apply protocols for assessment and diagnosis of the main psychiatric disorders in children and adolescents
- Know the multimodal prevention and intervention methods for the main psychiatric disorders in children and adolescents and apply them working in a multidisciplinary team
- List the main classes of psychotropic drugs indicated in child and adolescent psychiatric disorders and representatives of these classes
- Mention the medication side effects and their management for the drugs used in child and adolescent psychiatric disorders
- Monitor drug therapy in terms of efficiency and safety

- List the types of psychotherapy indicated in child and adolescent psychiatric disorders
- Students will be familiar with the main research directions in the field of pediatric psychiatry
- Students will develop their synthesis and bibliographic documentation skills.

**Course content:**

1. Principles and basic theories of pediatric psychiatry. Psychiatric examination in child and adolescent. Particularities of psychopathology by age stages
2. Attention deficit hyperkinetic disorder. Conduct disorders. Juvenile delinquency.
3. Intellectual disability. Learning disorders. Tics. Stuttering. Enuresis and encopresis. Sleep disorders in children and adolescents.
4. Anxiety disorders in children and adolescents. Eating disorders in children and adolescents. Abuse in children and adolescents.
5. Autism Spectrum Disorder
6. Affective disorders in children and adolescents. Psychotic disorders in children and adolescents.
7. Addictions in children and adolescents. Notions of psychotherapy and psychopharmacology in children and adolescents.

**Practical activity**

1. Particulars of the psychic examination in children and adolescents
2. ADHD. Behavioral disorders
3. Delays in mental development. Learning disorders. Tics. Stuttering. Sleep disorders.
4. Anxiety disorders in children and adolescents. Eating Disorders (Mental Anorexia and Bulimia). Child and adolescent addictions.
5. Autism spectrum disorders in children and adolescents
6. Depression in children and adolescents. Bipolar disorder in children and adolescents. Schizophrenia in children and adolescents.
7. Child and adolescent abuse. Notions of psychotherapy and psychopharmacology in children and adolescents.

**References:**

1. Lecture notes
2. Lupu V. (2009). Introducere în hipnoterapia și în psihoterapia cognitiv-comportamentală a copilului și adolescentului, Ed.ASCR, Cluj-Napoca.
3. Iftene Felicia (1999). Psihiatria copilului și adolescentului, Casa Cărții de Știință, Cluj-Napoca.
4. Diagnostic and Statistical Manual of Mental Disorders, 5th ed. Text Revision. Washington (DC). American Psychiatric Association, 2013.

5. International classification of mental and behavioral disorders. Clinical descriptions and diagnostic guidelines, 10th ed. Geneva: World Health Organization, 1992.
6. [www.nice.org](http://www.nice.org)
7. <http://ktclearinghouse.ca/cebm/>. Centre for Evidence-Based Medicine

**Evaluation:** (represents 25% of final grade)

- Written exam                      50%
- Practical exam                    50%

## INFECTIOUS DISEASES

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Infectious Diseases  
**Course coordinator:** Assoc. Prof. Lupșe Mihaela, MD, PhD,  
 Lecturer Monica Muntean, MD, PhD  
**Departament:** Medical specialities  
**Discipline:** Infectious Diseases  
**Course code:** MED6210EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours / week			hours / sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	7	-	10	49	-	70	106	225	9	Written+ practical exam

L = lectures; PA = practical activities; CI = clinical internship

### Pre-requisites:

- Microbiology, Morphopathology, Physiology, Pharmacology, Semiology, Internal Medicine, Neurology, Pediatrics
- To know how to take the general clinical examination, to know how to complete the observation sheet, to interpret the result of the paraclinical examinations.

### General objectives:

- At the beginning of the third millennium the infectious diseases still represent, worldwide, major causes of morbidity and mortality. The study and understanding of the infectious diseases is a necessity regarding epidemiological, etiology-pathogenesis and clinical aspects, but also concerning the methods of diagnostic and the therapeutic strategies (etiologic, pathogenic and symptomatic).
- Importance of Infectious Diseases in condition of the new and re-emerging pathogens and bioterrorism threat.
- Difficulties in establishing the therapeutic attitude due to high resistance to chemotherapy of many pathogens (bacteria, viruses, fungi, parasites).
- Knowledge that many causes of immunosuppression are contributing factor for emergence of infectious diseases with serious outcome.

**Specific objectives:**

- Under the current conditions clinical presentation and outcome of many infectious diseases is not typical being influenced by changes in resistance and reactivity of host organism, pathogenicity and chemotherapeutic sensitivity of microorganisms. As a result, epidemiological and clinical diagnosis requires corroboration with laboratory examinations (microbiological, serological and molecular) and a complex differential diagnosis of many other diseases (infectious or noninfectious) must be done.
- Establishing therapeutic strategy (etiologic, pathogenic, symptomatic) takes into account the changes in sensitivity to chemotherapy and clinical forms of disease, often severe, and possible complications that may influence the clinical course and prognosis.

**Course content:****Basic principles of infectious diseases**

1. Infection, Infectious diseases
2. Pathogenic Mechanisms of Infectious Diseases
3. Basic Principles in the Diagnosis of Infectious Diseases
4. Anti-Infective Therapy: Principles of Anti-Infective Therapy. Pharmacokinetics of antiinfective agents, clinical prophylactic use, untowards reactions. Antibacterial drugs: Beta-Lactam Antibiotics (Penicillins, Cephalosporins, Other Beta-Lactam Antibiotics), Aminoglycosides, Macrolides, Clindamycin, Ketolides, Glycopeptides, Rifamycins, Tetracyclines, Chloramphenicol, Polymyxins, Oxazolidinones, Sulfonamides and Trimethoprim, Quinolones, Metronidazole. Antiviral drugs ( other than antiretrovirals). Systemic antifungal agents
5. Therapy with hyperimmune antiserum, interferons, immunoglobulins, glucocorticosteroids, immunomodulatory agents

**Infectious Diseases**

1. Acute Pharyngitis: Viral Pharyngitis. Bacterial Pharyngitis (group A beta-hemolytic streptococci, group C and G beta-hemolytic streptococci, mixed aerobic/anaerobic infection). Vincent and Ludwig Angina, Peritonsillar Abscess
2. Streptococcal Infectious (Scarlet Fever, Erysipelas, Streptococcal Toxic Shock Syndrome)
3. Staphylococcal Infectious
4. Rubeola ( Measles)
5. Rubella ( German Measles)
6. Infectious with Varicella-Zoster Virus (Varicella, Herpes Zoster)
7. Influenza
8. Infectious Mononucleosis
9. Mumps

10. Diphtheria
11. Pertussis
12. Community acquired Pneumonia
13. Central Nervous System Infections: Viral and Bacterial Meningitis. Acute Encephalitis
14. Gastrointestinal Infections: Shigellosis. Foodborne Disease. Botulism. Cholera. Trichinosis
15. Acute Viral Hepatitis
16. Cardiovascular Infections: Endocarditis
17. Tetanus
18. Anthrax
19. Rabies
20. Sepsis and sepsis shock
21. Leptospirosis
22. Lyme disease
23. HIV infection

**Clinical Practice:**

Clinical cases (case presentations with infectious pathology)

1. Streptococcal Infections
2. Staphylococcal Infections
3. Infections with Varicella-Zoster Virus
4. Mumps
5. Measles
6. Rubella
7. Infectious Mononucleosis
8. Influenza
9. Pneumonia
10. Meningitis
11. Viral Encephalitis
12. Acute Viral Hepatitis
13. Gastrointestinal Infections
14. Foodborne Disease
15. Trichinosis
16. Leptospirosis
17. Anthrax (clinical practice or images)
18. Tetanus (clinical practice or images)
19. Sepsis
20. HIV infection/AIDS
21. Diphtheria (clinical practice or images)

**References:**

1. *Toronto Notes for Medical Students* Essential Med Notes 2016

2. Lupse Mihaela - *Lecture Notes on Infectious Diseases*, Ed. Medicală Universitară "Iuliu Hațieganu" Cluj-Napoca 2011
3. Lecture handouts

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## ANESTHESIA AND INTENSIVE CARE

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Anaesthesia and Intensive Care  
**Course coordinator:** Assoc. Professor Bodolea Constantin MD, PhD  
 Assoc. Professor Petrişor Cristina, MD, PhD  
**Department:** Surgery  
**Discipline:** Anesthesia and Intensive Care 2 (ATI 2)  
**Course code:** MED6211EN

Sem.	Course type	Lectures	Practical activities			Lectures	Practical activities			Individual study	TOTAL	Credit	Evaluation
		Hours/week			Hours/sem								
		L	PA	CI	L	PA	CI						
II	Compulsory	1,5	1,5	-	21	21	-	33	75	3	Written + practical exam		

L=lectures; PA=practical activities; CI=clinical internship

**Pre-requisites:** Knowledge of Physiology, Pathophysiology, Pharmacology, Clinical Semiology, General Surgery, Internal Medicine

### General objectives:

1. Understanding anaesthesia as a way to prevent somatic and psychological effects induced by surgery.
2. Intensive therapy at interference between specialties: from pathophysiology to diagnosis and current therapy of major organ failure.
3. Developing practical skills by learning techniques, manoeuvres and intensive care procedures.
4. Learning general concepts of perioperative medicine valid for all medical-surgical specialties
5. Awakenning interest in the specialty of anaesthesia and intensive care.

### Specific objectives:

1. Acquiring notions regarding general pharmacology of anaesthetic drugs and anaesthesia equipment.
2. Understanding preoperative assessment and patient classification in anaesthetic risk score.
3. Understanding anaesthesia technique in accordance with preoperative evaluation and surgical techniques.
4. Understanding clinical features and treatment measures in various types of shock (hypovolemic, cardiogenic, septic, anaphylactic, neurogenic shock).

5. Understanding practical aspects of hemodynamic monitoring in different types of shocks.
6. Acquiring clinical features and treatment options in acute respiratory failure (hypoxemic and hypercapnic): oxygen therapy, non-invasive and invasive ventilatory support.
7. Understanding the main hydro electrolytic imbalance and acid-base disorders and their treatment.
8. Learning the main types of fluid solutions, blood products and transfusion indications.
9. Acquiring the principles of acute and chronic pain management
10. Perioperative medicine principles (pre and postoperative rehabilitation, continuation/stopping of chronic medication during perioperative period, knowledge of perioperative risk scores).

**Course content:**

1. General anaesthesia
2. Regional anaesthesia (spinal, epidural anaesthesia)
3. Acute respiratory failure
4. Acute and chronic pain
5. Shock
6. Hydroelectrolytic imbalance and acid base disorders. Fluid therapy and blood transfusion.
7. The concepts of perioperative medicine.

**Practical activities:**

1. Recognition of rhythm disorders. Activity on Simulator.
2. Airway management.  
Non-instrumental methods of desobstruction of the airways  
Instrumental methods of desobstruction of the airways  
Orotracheal intubation  
Supraglottic devices  
Devices required for difficult intubation
3. Acid-basic and hydroelectrolyte balance disorders  
Volemic therapy crystalloid solutions, colloids, blood products
4. Clinical internship in the operating unit  
Pre-anesthetic evaluation, preparation, patient monitoring  
Discusses anesthetic features  
View general and regional anesthesia techniques
5. Clinical internship. The critical patient in the Intensive Care section  
Section features, patient evaluation and monitoring.  
Critical patient hemodynamic monitoring (TA, EKG, other minimally invasive modalities)  
Volemic therapy and vasoactive support to the critical patient

6. Clinical internship. The critical patient in the Intensive Care section  
Addressing and monitoring the patient with respiratory failure  
Modalities of oxygen therapy, non-invasive and invasive mechanical ventilation.

**Mandatory reference:**

1. Mirali S, Seneviratne A. Toronto notes 2020 (Ed 36).  
[https://www.fireup.cc/up/toronto\\_2020.pdf](https://www.fireup.cc/up/toronto_2020.pdf)
2. Morgan & Mikhail's Clinical Anesthesiology 6<sup>th</sup> edition, 2018
3. [www.emedicine.com](http://www.emedicine.com)
4. [www.postoppain.org](http://www.postoppain.org)
5. Ionescu D, Bodolea C. Manual de anestezie-terapie intensivă pentru studenții la medicină. Editura „Iuliu Hațieganu”, 2019 ISBN 978-973-693-898-6
6. [www.openanesthesia.org](http://www.openanesthesia.org)

**Optional reference:**

Daniel Sloniewsky, *Medical Student's Guide to Intensive Care Medicine*. 2005.  
[https://somwebapps.marshall.edu/ms4courses/Documents/MED833\\_Guide.pdf](https://somwebapps.marshall.edu/ms4courses/Documents/MED833_Guide.pdf).

**Evaluation:**

- Written exam 50%
- Practical exam 50%

## TRAINING IN THE PRACTICAL SKILLS CENTER. INTERPROFESSIONAL EDUCATION

**Field of study:** Health  
**Study program:** Medicine  
**Course title:** Training in the practical skills center.  
**Interprofessional education**  
**Course coordinator:** Prof. Claudia Diana Gherman, MD, PhD  
**Department:** Medical Education  
**Discipline:** Skills – Humanistic Sciences  
**Course code:** MED6212EN

Semester	Course Type	Lectures			Practical activities			Individual study	TOTAL	Credits	Evaluation
		hours/week			hours/sem.						
		L	PA	CI	L	PA	CI				
II	Compulsory	0,5	1,5	-	7	21	-	35	63	2	Practical exam

L=lectures; PA=practical activities; CI=clinical internships

**Pre-requisites:** Notions of Basic Practical Skills

### General objectives:

The aim of this course is learning and exercising advanced clinical labors necessary for the profession of medical doctor.

### Specific objectives:

- Learning and exercising labours indispensable to the practicing of the medical profession (emergency medicine, surgery, gynaecology and ATI) on mannequins and simulators.
- Mastering the base and advanced principles, as well as providing the first aid qualified in the most important medical – surgical emergencies, in simulated situations.
- Learning by practicing the evaluation of the critical patient and of the management of the emergency situations.

### Course contents / Practical activities:

#### EMERGENCY MEDICINE

1. Air path suction by devices and non-devices
2. Giving oxygen: simple mask, nose cannula, mask with reservoir, Venturi
3. BLS: ventilation – mouth to mouth (with the savor handkerchief), mouth to mask, with balloon and mask
4. BLS: CT (adult, pregnant woman); Defibrillation (paddles/patch)

5. Intraosseous access
6. Immobilizing the fractures
7. The control of the external hemorrhages

**SURGERY I**

1. Introducing the sterilization, control, keeping the sterility
2. Standard and additional precautions against the infections
3. Bandages
4. Introducing the nose-gastric tube

**SURGERY II**

1. Incision and draining the superficial injuries
2. Preventive and curative drainage
3. Surgical suture
4. The technique of a simple bandage
5. Caring for wound and stomas

**SURGERY III**

1. Subcutaneous, intradermal, intramuscular, intravenous injections
2. Rectal touch
3. Assembling urinary probe

**ATI**

1. Venous puncture. Assembling an i.v. perfusion
3. Arterial puncture
4. Administering oxygen
5. Monitoring EKG, SpO<sub>2</sub>, TA, AV, temperature.

**References:**

1. *OSCE Stations for Medical Finals*. Adam Feather, Ashling Lillis, Tony Joy, John S P. Lumle, Pastest, 2012.
2. *OSCE Cases with Mark Schemes*. Tamara North, Dr., Jeremy F. Lynch, Aneesha Verma, Anshan Publishers, 2012.
3. *Surgery, OSCE and Data Interpretation*. Nadeem Nadeem, Holly Holly, Nadeem Hasan, Holly Sitsapesan Taylor & Francis Group, 29 mar. 2013.
4. Katrina F. Hurley, *OSCE and Clinical Skills Handbook*, Elsevier Science Health Science Division, 2005
5. *OSCEs for Medical Students*. Adam Feather, John Stuart Penton Lumley, Ramanathan Visvanathan, PasTest Ltd, 2004
7. Boet S, Granry JC, Savoldelli G. *La simulation en santé - De la théorie à la pratique*. Ed. Springer-Verlag Paris, 2013.
8. Levine A.I, DeMaria S Jr., Schwartz A.D., Sim A.J. *The Comprehensive Textbook of Healthcare Simulation*, Ed. Springer-Verlag New York, 2013.

**Evaluation:**

- Evaluation range charts of the clinical performance 80%
- Activity portfolio 20%

## PUBLIC HEALTH AND MANAGEMENT

**Field of Study:** Health  
**Study program:** Medicine  
**Course title:** Public Health and Management  
**Course** Lecturer Bogdan Florin Covaliu, MD, PhD  
**coordinator:** Lecturer Gabor Harosa Florina Maria, MD, PhD  
**Department:** Community Medicine  
**Discipline:** Public Health and Management  
**Course code** MED6213EN

Sem.	Course type	Lectures			Practical activities			Individual study	TOTAL	Credit	Evaluation
		hours / week			hours / week						
		C	LP	St	C	LP	St				
II	Compulsory	2	1	-	28	14	-	40	82	3	Written+ practical exam

C = courses; LP = workshop; St=internship

### Pre-requisites:

Primary healthcare; Family Medicine; Legislation; Psychiatry; Oncology; Environmental medicine; Occupational health; Epidemiology; Legal Medicine; Behavioral sciences; Obstetrics-Gynecology; Scientific Research Methodology

### General objectives:

Understanding the content of Public Health, defining and measuring the health status of the population and its factors, the main demographic events and phenomena, demographic transition, reproduction of the population, indicators of health status measurement, chronic diseases as a public health problem, preventive strategies, health promotion and health education, healthcare management, healthcare systems, health insurance and project management.

### Specific objectives:

- Defining and measuring population's health status and its conditioning factors
- Defining and understanding the important demographic events, phenomenon, and trends
- Using the demographic information for measuring the phenomenon
- Describing the principals characteristics of demographic phenomenon

- Understanding the relationships between demographic phenomenon and Public Health
- Identify the factors which are influencing the population reproduction,
- Measuring, describing and comparative analyzing of mortality and identify the principal characteristics of mortality and of the possibilities to control it
- Understanding the importance and actuality of prophylaxis
- Proving the advantages and limits of the principal preventive strategies
- Describing the actions and the preventive strategies at the primary level regarding the important health issues
- Defining the concept of health promotion end health education and understanding the differences between the objectives of this two
- Understanding the notion of communication and behavior in healthcare services
- Defining and understanding the steps of a programming and evaluation of a health education project
- Describing and understanding the impact of demographic transition on the population's health
- Identifying the managerial roles, functions and attributes
- Describing the organizational culture and the development of systemic thinking in healthcare
- Understanding the differences, characteristics, advantages and disadvantages of the main healthcare systems
- Understanding the stages of the project management.

**Course content:**

1. WHO's objectives for XXIth century
2. Public health and individual health
3. Defining and measuring population's health status and it's conditioning factors
4. The important demographic events and phenomenon
5. Population reproduction
6. Indicators used for measuring the health status
6. Chronic diseases as a public health problem
7. Preventive strategies, health promotions and health education
8. Demographic transition
10. Introduction in management of healthcare services, socio-medical marketing and project management
11. Healthcare systems, social health insurance
- 12 Communication in healthcare services

**Practical activities:**

1. Job description and duties of the family doctor
2. The employment contract and the work program
3. The information system used by the family doctor for the activity with the patients and the release of the medication
4. Patient rights
5. Coding of morbidity recorded by family doctors, doctors specializing in offices, outpatient clinics and hospitals
6. Ways of Financing health care in Romania, compared to EU countries, including the DRG system
7. Issuance of medication for patients in primary, secondary and tertiary care, standardized forms, legal regulations
8. High risk drugs in medical practice. Ethnobotanical substances - a public health problem among young people
9. Monitoring of chronic patients by the family doctor together with the specialist doctor and Expertise of work capacity
10. Medical leave with temporary incapacity for work - current legal regulations, forms and codification
11. Ascertain the birth - birth certificate, prenuptial medical certificate
12. Ascertain the death - the medical certificate confirming the death
13. Infant mortality, by age subgroups, limits according to WHO, death records by age subgroups.
14. The elderly - medical and social investigation, degrees of dependency, care units at community level
15. Decentralization in community health care and reorganization of the health care system
16. Classic and electronic observation sheet. Discharge and care of patients with medical and social dependencies and home care
17. Medical and social supervision of the pregnant woman by the family doctor and the specialist doctor

**References:**

1. BORZAN C. - *Noi abordări ale Sănătății Publice și Managementului în Regiunea Europeană a Organizației Mondiale a Sănătății*, Editura Medicală Universitară „I. Hațieganu”, Cluj-Napoca, 2007
2. BORZAN C., MOCEAN F., - *Sănătate Publică*, Editura Medicală Universitară „I. Hațieganu”, Cluj-Napoca, 2002
3. MARCU M.G., MINCĂ D., *Sănătate publică și management sanitar*, Editura Universitară „Carol Davila”, București, 2003
4. MUREȘAN P., *Manual de metode matematice în analiza stării de sănătate*, Editura medicală, București, 1989

5. O.M.S. – *Health 21 – Health for all în the 21-st century, European Health for All, Series no. 5*, Copenhaga, 1996
6. TREBICI V., *Demografie*, Editura Științifică și Enciclopedică, București, 1979
7. TREBICI V., *Populația Terrei*, Editura Științifică, București, 1991
8. VLĂDESCU C. (coord.), *Managementul serviciilor de sănătate*, Editura Expert, București, 2000
9. Legea drepturilor pacientului nr. 46/ 2003;
10. Legislație sanitară actualizată

**Evaluation:**

- Written exam            60%
- Practical exam         40%

## MALPRACTICE AND MEDICAL LAW. MEDICAL DEONTOLOGY

<b>Field of study:</b>	<b>Health</b>
<b>Study program:</b>	<b>Medicine</b>
<b>Course title:</b>	<b>Malpractice and medical law. Medical deontology</b>
<b>Course coordinator:</b>	<b>Leturer adv. Ionut Vida-Simiti, PhD</b>
<b>Department:</b>	<b>Medical Education</b>
<b>Discipline:</b>	<b>Skills – Humanistic Sciences</b>
<b>Course Code:</b>	<b>MED6214EN</b>

Sem.	Type of course	Lectures			Practical Activities			Individual Study	TOTAL	Credit	Evaluation
		hours/ week			hours / sem / module						
		L	PA	CI	L	PA	CI				
II	Compulsory	2	-	-	14	-	-	36	50	2	Written exam

C = Course; P. = Practical classes; St. = Stages

### Pre-requisite conditions: -

### General objectives:

Merging medical knowledge with the legal framework

### Specific objectives:

Acquiring technical and practical knowledge about the juridical framework for exercising medical profession.

The beneficiaries and the medical care providers' rights and obligations.

Acquiring technical and practical knowledge about the concept of medical liability.

### Course content

1. Medical juridical relationships: Introduction in medical law. The concept and regulation of medical relationship
2. The origin of medical juridical relationship: Medical contract. Medical juridical act. The group of contracts in the Public Healthcare System
3. The elements of the medical juridical relationship: Medical healthcare providers and beneficiaries. Object and content of the medical service
4. Medical personal of the medical health providers: General conditions for exercising the medical profession. The membership of Romanian Medical Association
5. Medical liability: The concept of medical liability. Criminal liability, disciplinary liability, labour liability. Civil medical liability

6. Requirements for medical liability: General requirements (damage, unlawful acts, causation, guilt). Special requirements (unlawful act during exercising medical profession). Situations that don't imply medical liability

7. The consequences of medical liability: A new juridical relationship with the purpose of covering the damage. The special procedure and malpractice insurance.

**References:**

1. I. Vida-Simiti: Interventional clinical and chemical studies in Romania, legal guarantees. *Revista de Chimie (București)*, 1 /2018, p. 267-270
2. I. Vida-Simiti: Medical liability for Off Label use of drugs in Romania. *Revista de Chimie (București)*, 3/2018, p.755-757
3. J. Samanta, A. Samanta, *Medical Law*, Ediția a II-a, Ed. Palgrave Macmillan Publishers Limited, Londra, 2015
4. I. Vida-Simiti, *Răspunderea civilă a medicului [Medical Civil Liability]*, Ed. Hamangiu, București, 2013
5. T. Hope, J. Savulescu, J. Hendrick, *Medical Ethics and Law*, Ed. Churchill Livingstone, 2007
6. M. Stauch, K. Wheat, J. Tingle, *Text, Cases and Materials on Medical Law*, Ed. Routledge-Cavendish, 2007

**Evaluation:**

- Written exam 100%

## **B. ELECTIVE COURSES**

### **METHODOLOGY REGARDING THE ELECTIVE COURSES AT THE FACULTY OF MEDICINE Academic year 2021-2022**

The purpose of the present Methodology is to help students of the Faculty of Medicine choose elective courses.

1. The Council of the Faculty of Medicine organized in March approves the list of elective courses offered by the departments. Students are informed about this offer through:
  - a) the website of the Faculty of Medicine, the section "Noutăți pentru studenți"
  - b) the panel of the Faculty of Medicine
  - c) the students' internet discussion groups.
2. Each student in the Faculty of Medicine must choose an elective course and register for it within the period established by the Direction of the Faculty.
3. The enrollment can be done online on <http://bc.umfcluj.ro/optionale/>
4. Once filled in and signed, the application represents the student's commitment to attend that elective course. At the same time, once elected, an optional course becomes mandatory.
5. To organize standardized optional courses (free for students), 60 students must be enrolled at least. The maximum number of students enrolled per course is 80/100.
6. Elective courses with 15 to 60 students will be charged.
7. After the registration deadline, students who are not enrolled will be automatically enrolled to the elective courses where there are still places.
8. At the exam, students will receive the mark PASS/FAIL.
9. Students willing to attend more than one elective course are allowed to do this depending on places left after the end of the period of enrollment and distribution of un-enrolled students.

10. Until the end of June 2020, the final list of students enrolled in each course will be made available to departments and students.
11. For the first year students (2020-2021), the enrollment for elective courses takes place in October 2020.

DEAN,  
Prof. Șoimița Mihaela SUCIU, MD, PhD

**ELECTIVE COURSES FREE OF CHARGE**

**MEDICINE STUDY PROGRAM IN ENGLISH**

**1<sup>st</sup> YEAR (2021- 2022)**

<b>No.</b>	<b>Course title</b>	<b>Course coordinator</b>	<b>Discipline</b>
1	Advanced communication skills	Assoc. Prof. Codruța Popescu, MD, PhD	Practical Skills - Humanistic sciences
2	Introduction to experimental surgery	Assoc. Prof. George Dindelegan, MD, PhD	Surgery I

**2<sup>nd</sup> YEAR (2021 - 2022)**

<b>No.</b>	<b>Course title</b>	<b>Course coordinator</b>	<b>Discipline</b>
1	The Use of Stem Cells in Cellular Therapy and Tissue Engineering	Prof. Carmen Mihaela Mihiu, MD, PhD Assoc. Prof. Bianca Boșca, MD, PhD	Histology
2	Cardio-circulatory examinations	Lecturer Radu Roșu, MD, PhD	Cardiology

**3<sup>rd</sup> YEAR (2021 - 2022)**

<b>No.</b>	<b>Course title</b>	<b>Course coordinator</b>	<b>Discipline</b>
1	How to improve the physician-patient relationship	Prof. Dan Dumitrașcu, MD, PhD	Medical Clinic II
2	Neurological examination in medical emergencies	Lecturer Adina Stan, MD, PhD	Neurology and Pediatric Neurology

**4<sup>th</sup> YEAR (2021 - 2022)**

<b>No.</b>	<b>Course title</b>	<b>Course coordinator</b>	<b>Discipline</b>
1	Reumatological emergencies in clinical practice	Lecturer Muntean Laura , MD, PhD	Reumatologie
2	Basic techniques in general surgery	Lecturer Florin Graur , MD, PhD	Chirurgie III

**5<sup>th</sup> YEAR (2021 - 2022)**

<b>No.</b>	<b>Course title</b>	<b>Course coordinator</b>	<b>Discipline</b>
1	Ultrasonography in medical and surgical emergencies	Lecturer Mihai Socaciu, MD, PhD	Medical Imaging
2	Brief methodological guide for the thesis	Lecturer Tudor Călinici, MD, PhD	Medical Biostatistics and Informatics

**6<sup>th</sup> YEAR (2021 - 2022)**

<b>No.</b>	<b>Course title</b>	<b>Course coordinator</b>	<b>Discipline</b>
1	Medico-legal aspects of intrafamilial violence	Lecturer Ștefan Anitan, MD, PhD	Forensic Medicine
2	Obstetrical ultrasound – a window to the fetus	Assoc. Prof. Răzvan Ciortea, MD, PhD, Assoc. Prof. Andrei Mihai Maluțan, MD, PhD	Obstetrics-Gynecology II

**OPTIONAL COURSES - with fee**

**PEDAGOGIC MODULE**

<b><i>No.</i></b>	<b><i>Course title</i></b>	<b><i>Course coordinator</i></b>	<b><i>Discipline</i></b>
1.	Medical pedagogy (2 <sup>nd</sup> year)	Assoc. Prof. Horia Coman, MD, PhD	Medical Psychology
2.	Teaching Methods (4 <sup>th</sup> , 5 <sup>th</sup> , 6 <sup>th</sup> year)	Prof. Valentin Muntean, MD, PhD	Surgical Clinic IV
3.	Pedagogical Practice (4 <sup>th</sup> , 5 <sup>th</sup> , 6 <sup>th</sup> year)	Prof. Valentin Muntean, MD, PhD	Surgical Clinic IV
4.	Educational Psychology (5 <sup>th</sup> , 6 <sup>th</sup> year)	Assoc. Prof. Horia Coman, MD, PhD	Medical Psychology