UNIVERSITÀ DEGLI STUDI DI PADOVA

A.Y. 2025/2026

SCUOLA DI MEDICINA E CHIRURGIA

CALL FOR ADMISSION

*For **years subsequent to the first***

of the Single-Cycle Master's degree programme in

MEDICINE AND SURGERY

SUMMARY

1. GENERAL INFORMATION

Selections are now open for admissions to years subsequent to the first, for the academic year 2025/2026[1], to the single-cycle Master's Degree programme in Medicine and Surgery. The degree programmes are delivered in English.

1.1 Degree programmes, locations and places available

The number of places made available for the academic year 2025/2026, following withdrawal from studies, transfer to another university location, transfer to another degree programme of the students enrolled are as follows:

Degree class D.M. 270/04	Single-cycle master's degree programme	Seat	Places in the 2nd year	Places in the 3rd year	Places in the 4th year	Places in the 5th year	Places in the 6th year
LM-41	Medicine and Surgery	Padua	**1**	**3**	**1**	**2**	**0**

1.2 Admission requirements

To be admitted to a year of the degree programme following the first, candidates must:

1. be in possession of a **high school diploma** obtained in Italy or abroad[2] recognized as suitable for access to university education according to current legislation.
2. **Participate in the selection** for the degree programme of your interest, by completing the following steps:
   - Submit an application for credit recognition (point 2)
   - Obtain a resolution indicating the year of admission following the first (point 3)
   - Take the admission test (point 4)
3. **Be admitted**: any rankings are drawn up as indicated in point 3.2;
4. **Enrolment**: admitted candidates must submit an application for enrolment, degree programme change or transfer from another university within the peremptory deadlines provided, as indicated in points 3.2 and 4.6.

2. Application for recognition of credits and assessment methods

The application for recognition of previous credits for career shortening **must be submitted from 23 June until 15:00 on 17 July 2025,** according to the instructions on page https://www.unipd.it/riconoscimento-crediti-pregressi.

The appropriate Committees evaluate the application for recognition of credits submitted, establish **activities and credits that can be recognized** and determine the **year of the degree programme to which the candidate is eligible** on the basis of what is established in Annex 3 of the Teaching

1 Having regard to art. 10 paragraph 2 of Ministerial Decree no. 418 of 30 May 2025 "Ministerial Decree governing the implementation of the new methods of access to single-cycle master's degree programmes in Medicine and Surgery, Dentistry and Dental Prosthetics and Veterinary Medicine – a.y. 2025-2026"
2 For more information: https://www.unipd.it/en/how-apply

Regulations of the degree programme: "Regulations for the recognition of university educational credits (CFU/ECTS)". The rules are available on page https://didattica.unipd.it/.
Candidates are informed of the outcome of the evaluation and are authorized to view their resolution online.

With regard to the recognition of credits, it is specified that:

- only the educational activities already taken and registered in the University of origin at the time of submission of the application, **for which the student has provided documentation on the contents (programs and scientific disciplinary sector - SSD)** are evaluated;
- all credits relating to exams passed more than **10 calendar years** ago before the start date of the credit recognition procedure **are considered** obsolete and therefore not recognisable;
- credits deriving from exam modules not taken in their entirety **on the date of submission of the application for credit recognition** cannot be assessed;
- the credits that can be recognized to candidates coming from **courses NOT related to class LM/41 of the Master's Degrees in Medicine and Surgery or 46/S of the Specialist Degrees in Medicine and Surgery** are validated to **the extent of 50%**;
- on specific subjects, the Committees may avail themselves of the collaboration of the heads of the individual **courses** and teaching modules;
- the list of **recognizable SSDs** with the **relative maximum limit of recognizable CFUs for each of the SSDs reported is left below**:

SSD	CFU/ ECTS	SSD	CFU/ ECTS	SSD	CFU/ ECTS	SSD	CFU/ ECTS
BIO/09	**14**	MED/04	**20**	MED/19	**1**	MED/34	**2**
BIO/10	**17**	MED/05	**2**	MED/20	**1**	MED/35	**3**
BIO/11	**8**	MED/06	**3**	MED/21	**2**	MED/36	**4**
BIO/12	**6**	MED/07	**10**	MED/22	**1**	MED/38	**6**
BIO/13	**5**	MED/08	**7**	MED/23	**2**	MED/39	**1**
BIO/14	**8**	MED/09	**20**	MED/24	**2**	MED/40	**4**
BIO/16	**13**	MED/10	**3**	MED/25	**4**	MED/41	**3**
BIO/17	**5**	MED/11	**3**	MED/26	**6**	MED/42	**4**
CHIM/08	**1**	MED/12	**4**	MED/27	**1**	MED/43	**3**
CHIM/09	**1**	MED/13	**4**	MED/28	**1**	MED/44	**3**
FIS/07FIS/01*	**4**	MED/14	**3**	MED/29	**1**	MED/49	**2**
ING-INF/05	**2**	MED/15	**4**	MED/30	**2**	MED/50	**1**
MED/01SECS-S/05*	**3**	MED/16	**2**	MED/31	**2**	M-FIL/03	**3**
MED/02	**1**	MED/17	**5**	MED/32	**1**	M-PSI/02 M/PSI/01*	**2**
MED/03	**6**	MED/18	**13**	MED/33	**4**	SECS-P/10 SECS-P/07* SECS-P/08*	**2**

** SSDs Assessable for the purposes of counting ECTS credits for eligibility for years subsequent to the first as they are to be considered "affini"(similar) as per Annex D of the Ministerial Decree of 4 October 2000.*

3. ADMISSION TO YEARS SUBSEQUENT TO THE FIRST

3.1 Eligibility

Eligibility for a year of the degree programme subsequent to the first is decided by the commissions following the evaluation of the applications for credit recognition (as per point 2) and is awarded on the basis of the number of credits recognized:

- **2nd year**: recognition of at least **30 credits**;
- **3rd year**: recognition of at least **80 credits**;
- **4th year**: recognition of at least **130 credits**;
- **5th year**: recognition of at least **180 credits**;
- **6th year**: recognition of at least **230 credits**.

3.2 Procedures for access and formation of rankings

Starting from **8 September 2025**, a document containing the list of candidates eligible for each year of the degree programme will be published on page https://www.unipd.it/ammissioni-medicine-surgery. In particular, with reference to each year of the degree programme:

- In the event that the number of eligible candidates is **less than the number of places available**, candidates are admitted to the proposed admission year and receive instructions for submitting the **enrolment application at the same time**;
- In the event that the number of eligible candidates is **greater than the number of places available**, a ranking is drawn up, in order of score, based on the outcome of **an admission test**. In the event of a tie, the candidate with the highest number of credits recognized in the resolution relating to exams or activities passed by the deadline for submitting the application for credit recognition prevails. In the event of a further tie, the youngest candidate prevails.
  The document published on 8 September indicates the **candidates who can take part in the admission test** and access the degree programme by following the instructions in point 4.

4 CANDIDATES REQUIRED TO TAKE THE ADMISSION TEST

4.1 Registration for the admission test

To participate in the admission test, it is necessary to submit a pre-enrolment application for the year of the programme indicated in the resolution received (point 2):

in the period 8 September (12:00 pm) – 18 September 2025 (12:00 pm)

Registration on the Uniweb portal

If you are accessing Uniweb for the first time, you must create a new account by clicking on www.uniweb.unipd.it and on *Menu* → *Registration*.

At the end of the registration, you will receive an e-mail username and activation code with which to access the uniweb.unipd.it/password/index.php/it/utenti/identifica/azione/a page, where you will be asked to set three security questions and a password. With the username obtained and the password set, you can access your reserved area.

Registration on the www.uniweb.unipd.it portal can also be done using SPID credentials, by clicking on the *Menu → items Registration with SPID.*
For access problems, you can contact the University Call Centre (www.unipd.it/callcentre).

Please note: The personal e-mail address entered in your Uniweb profile is the communication channel through which any deadlines and useful instructions for accessing the degree programme are provided. E-mails sent for this purpose have the value of official communication.

Pre-enrolment

To pre-enrol you must

1. access www.uniweb.unipd.it and click on *the items Home → Admission test → Degree programme Type "6-year single-cycle master's degree programme" → Ammissioni ad anni successivi al primo del Corso di laurea magistrale a ciclo unico in Medicine and Surgery.* At this stage it is also possible to request a personalized test (point 4.3).
2. verify the completion of the procedure by printing the summary;
3. pay the € 30.00 fee through the PagoPA procedure (instructions).

After the peremptory deadline of 12.00 noon on 18 September 2025, the connection is deactivated and it is no longer possible to fill in the pre-enrolment application necessary to take the admission test.
The service may be temporarily suspended for technical updating needs.

Contact & Support: www.unipd.it/immatricolazioni

4.2 Taking the test

The admission test takes place on **29 September 2025 at 11:00 a.m.**

Starting from **23 September 2025**, a document containing the information necessary for participation in the test is published on page https://www.unipd.it/ammissioni-medicine-surgery :

- the precise time of convocation;
- address and name of the building and classroom assigned for taking the test;
- other information that may be necessary and any updates.

Attention: these publications have the value of official communication to interested parties.

4.3 Structure of the test, time available and calculation of the score

The admission test consists of the solution of **60** multiple-choice questions (three answer options, only one of which is correct).

SCHOOL OF MEDICINE AND SURGERY
MEDICINE AND SURGERY – YEARS SUBSEQUENT TO THE FIRST

The questions focus on the topics of the training activities provided for in the teaching system of the degree programme, at the University of Padua, in the year or years preceding the one for which admission is requested and are divided as indicated below.

Admission to the 2nd year

Topics	Number of questions
Cell biology	7
Physics for medicine	7
Biochemistry for medicine I	13
Medical Genetics	7
Molecular biology	13
Biochemistry for medicine II	13

Admission to the 3rd year

Topics	Number of questions
Infection	10
Immunity	10
Human Anatomy	10
Human Physiology	10
Nervous System	20

Admission to the 4th year

Topics	Number of questions
Diagnostic testing	10
Mechanisms of Diseases I Mechanisms of Diseases II	30
Physical Signs and Clinical Methodology	10
Therapeutic Molecules: General Properties	10

Admission to the 5th year

Topics	Number of questions

Blood Diseases and Clinical Pharmacology	13
Clinical Neurosciences	16
Gastrointestinal And Urinary Tract Diseases	17
Heart and Lung Diseases	14

A maximum time of 90 minutes is allotted for the performance **.**
The evaluation of the admission test takes place on the basis of the following criteria:

- **+ 1** point for each correct answer
- **- 0.25** points for each wrong answer
- **0** points for each answer not given.

The topics are reported in detail in Annex 1 which is an integral part of this call.

4.4 Examination Board and rules for carrying out the admission test

The Examination Committee is appointed by the Rector and is made up of professors of the degree programme or degree programmes covered by the call for admission.
The Classroom Commission, made up mainly of technical-administrative staff, is responsible for managing the supervisory activity in presence: it identifies the candidates, takes care of the application of the procedure, distributes and collects the papers (in the case of paper tests), draws up the report of all operations.

Each candidate is required to present himself for the appeal and identification operations, on the day set for the test, at the time and at the assigned location and classroom as published **on the relevant page of the call for admission,** in the appropriate section relating to instructions on taking the test.

Candidates can access the test venue only after having completed the identification procedures, showing the identity document indicated during registration or another valid document, as per Presidential Decree no. 445 of 28 December 2000.
Candidates who are late or without valid identity documents are not admitted to take the test.

During the test, candidates are forbidden and it is cause for cancellation of the test to interact with each other during the test, to introduce and/or use mobile phones, PDAs, smartphones, smartwatches, tablets, earphones, webcams or other similar equipment in the classrooms, as well as to introduce and/or use pens, pencils, stationery (or any other instrument suitable for writing) in the candidate's personal availability and/or introduce and/or use manuals, school textbooks, as well as reproductions, even partial, of them, notes on any support, blank sheets and reference material.

Candidates must stay until the time expires, even if they finish filling out the test before the minutes allotted for carrying it out.

4.5 Request for a personalized test for candidates with disability, disability or diagnosis of SLD

Candidates with disabilities, disabilities or specific learning disorders (SLD), in accordance with Article 16 of Law No. 104/1992 and Law No. 170/2010, may request an admission test with additional time and/or personalized support by making an explicit request to the Student Services Office – Inclusion Sector. To do this, you need to:

1. request the individualized test within the **pre-enrolment procedure** (point 4) on Uniweb, specifying the supports, aids or compensatory measures required. Any additional time assigned may not exceed 50% more (candidates with disabilities) and 30% more (candidates with SLD) than the time scheduled for the test;
2. **send an e-mail** to inclusione.studenti@unipd.it **by 12:00 (GMT+2) on 05/09/2025** attaching the following documentation:
   - **certificate of civil disability and/or certification** pursuant to Law no. 104 of 1992 issued by the competent medical commission for the territory, proving the type of disability (NO OMISSIS) and, where applicable, the percentage of disability recognized.
   - **certification diagnosis of SLD** issued no more than 3 years ago, if prior to the age of eighteen, or after the age of eighteen, by local public health facilities or by bodies and professionals accredited with the regional health service. Where not already specified in the diagnosis, ask the accredited private facility for the accreditation code/number. In compliance with the provisions of the "Guidelines on specific learning disorders" attached to the Ministerial Decree of 12 July 2011 prot. 5669, candidates with SLD are granted an additional time equal to a maximum of 30% more than that defined for the admission test.
     Candidates with SLD can request additional time and/or personalized support with the medical certification they hold, even if it has expired. The new documentation, updated for the university cycle of studies, must be sent to inclusione.studenti@unipd.it no later than 30 September 2025.
     However, personalized educational plans (PDP), SLD diagnoses issued before the last school cycle (upper secondary school) and/or by non-accredited private individuals are not accepted under any circumstances.
   - **valid identity or identification document**.

Candidates with disability, disability or SLD from EU countries and non-EU countries residing abroad who intend to take advantage of personalized support, must present the legalized certification, where required by the international regulations in force, attesting to the state of invalidity, disability or SLD, issued in the country of residence, accompanied by a translation, sworn or certified by the Italian diplomatic missions in accordance with the original text, in Italian or English. The Student Services Office – Inclusion Sector, in charge of examining these certifications, ascertains that the foreign documentation attests to a condition of disability, disability or SLD recognized by Italian legislation.
The supports and/or aids requested may be granted after assessment by the Student Services Office – Inclusion Sector. By the day before the test, candidates will receive a specific communication

regarding any support and/or provided, by e-mail sent by the Student Services Office - Inclusion Sector, inclusione.studenti@unipd.it.

During the test, tools such as dictionaries and/or dictionaries, forms, periodic table of the elements, concept maps, smartphones, smart glasses and other similar tools will not be admitted. Furthermore, computers and tablets other than those provided by the Inclusion Unit for the test are not allowed, subject to a specific request within the pre-enrolment procedure on Uniweb.

In the presence of a particularly complex condition, it is suggested to request an interview with dedicated staff, using the appropriate online form for requesting an appointment with the Inclusion Sector, to present one's individual needs:

https://web.unipd.it/prenotazioniservizi/settore-inclusione/

More information on the page: www.unipd.it/accoglienza-prove-ingresso

4.6 Publication of the ranking list – candidates who have taken the admission test

The ranking list for each year of the degree programme for which the admission test was delivered is published on page https://www.unipd.it/ammissioni-medicine-surgery starting from **7 October 2025**.

The application for enrolment, degree programme change or transfer from another university must be submitted within the deadlines indicated in the table below, depending on the time at which you are admitted to the ranking list. The procedures to be followed are communicated at the same time as the publication of the ranking list.

Publication of the ranking list and reassignments	**Deadline for enrolment, degree programme change and transfer from another university**
Ranking: 07/10/2025 (publication from 15:00) on page https://www.unipd.it/ammissioni-medicine-surgery	**from 3.00 p.m. on 08/10/2025 at 12.00 noon on 14/10/2025**
First reassignment*: **16/10/2025** in your Uniweb reserved area	**from 3.00 p.m. on 16/10/2025 at 12.00 noon on 20/10/2025**
Second reassignment*: 24/10/2025 in your Uniweb reserved area	**from 3.00 p.m. on 24/10/2025 at 12.00 noon on 28/10/2025**

**Reassignments are subject to the actual presence of available places to be assigned in the degree programme.*

Attention: failure to comply with the deadlines, the terms of the procedures indicated and the simultaneous payment of the first instalment is equivalent to renunciation of the place, which is put back up to competition in subsequent reassignments.

If, after this deadline, there are further vacancies due to the withdrawal of the winners, the assignment operations will continue with a direct call by the Student Careers Office - Enrolment and Access Tests Sector, according to the order of the ranking.

5. STUDENTS WITH A FOREIGN ENTRY TITLE

Students in possession of a foreign entry title are admitted according to the provisions of the Ministry of University and Research, available on the page www.mur.gov.it/it - *Università - Studenti stranieri*, after passing the required tests and submitting the necessary documentation.
If you have any questions, please contact the *Admissions and Welcome Unit* of the Global Engagement Office, e-mail international.admission@unipd.it.

5.1 Registration procedure for EU or non-EU applicants residing in Italy

This category includes:
- citizens of any member state of the European Union;
- citizens of Iceland, Liechtenstein, Norway, Switzerland, Republic of San Marino;
- citizens with dual citizenship, one of whom is Italian/European;
- citizens of a country not part of the European Union, residing in Italy and in possession of a valid residence permit that allows enrolment at the University, according to the current legislation on enrolment: https://www.unipd.it/soggiorni-superiori-90- student-days.

To participate in the selections for access to the following years of the degree programme in Medicine and Surgery, candidates are required to:
1. have submitted the application for recognition of credits (point 2);
2. **pre-enrol** on the https://www.uniweb.unipd.it/ portal in the manner and within the timeframe indicated in this call for admission (point 4);
3. take the **admission test** in the manner and timing indicated in this call for applications (point 4);

Successful candidates who intend to enrol must:
1. submit the documentation necessary to verify the validity of the admission ticket indicated on page www.unipd.it/studiare-italiano-immatricolarsi according to the methods and timing that will be indicated by the Admission and Welcome Unit of the Global Engagement Office;
2. submit the enrolment application and pay the first instalment in the manner and within the deadlines indicated in this call for applications;
3. upon arrival in Italy, submit the original documentation required (https://www.unipd.it/studiare-inglese-come-fare-domanda) in the manner and within the deadlines that will be indicated by the Admission and Welcome Unit of the Global Engagement Office (international.admission@unipd.it).

Failure to submit documentation, incomplete documentation or an unsuitable qualification do not allow the completion of enrolment by the offices.

5.2 Enrolment procedure for non-EU applicants residing abroad

To participate in the selections for access to the following years of the degree programme in Medicine and Surgery, candidates are required to:

1. **pre-enrol on the Universitaly** www.universitaly.it/index.php/dashboard portal, indicating the University of Padua and the degree programme of your interest. Pre-enrolment is required to apply for a study visa at the Italian diplomatic representation in the country of residence;
2. have submitted the application for recognition of credits (point 2);
3. if the test is required for admission to the year of the programme for which you are eligible, pre-enrol **on** the www.uniweb.unipd.it/ portal and take the **admission test** in the manner and within the timeframe indicated in this call for applications (point 4);

Successful candidates who intend to enrol must:

1. submit the documentation necessary to verify the validity of the admission ticket indicated on page www.unipd.it/studiare-italiano-immatricolarsi according to the methods and timing that will be indicated by the Admission and Welcome Unit of the Global Engagement Office;
2. submit the enrolment application and pay the first instalment in the manner and within the deadlines indicated in this call for applications;
3. upon arrival in Italy, submit the original documentation required (https://www.unipd.it/studiare-inglese-come-fare-domanda) in the manner and within the deadlines that will be indicated by the Admission and Welcome Unit of the Global Engagement Office (international.admission@unipd.it).

Failure to submit documentation, incomplete documentation or an unsuitable qualification do not allow the completion of enrolment by the offices.

6. PERSON IN CHARGE OF THE PROCEDURE, PERSONAL DATA, NOTES AND WARNINGS

1. Pursuant to art. 4 of Law 241 of 7 August 1990 (New rules on administrative procedure and right of access to administrative documents) and subsequent amendments, the Director of the Student Careers Office, Dr. Maria Chiara Ferraresi, is appointed as head of the administrative access procedure.
2. Responsible for the Access to Records Procedure: Director of the Student Careers Office, Dr. Maria Chiara Ferraresi. Candidates have the right to exercise the right of access to the documents of the competition procedure in accordance with the procedures provided for by the Decree of the President of the Republic of 12 April 2006 n. 184.
3. Current legislation on declarations: in the event that the documentation submitted by the candidate shows false or misleading declarations, without prejudice to the sanctions provided for by the Criminal Code and the special laws on the subject (Articles 75 and 76 of Presidential Decree 445/2000), the candidate automatically loses his/her enrolment. The University will recover any benefits granted (e.g. scholarships) and will not proceed with any type of refund of the fees paid. Finally, the false declaration will result in the exposure to the action for damages by the counterparties.

4. The processing of personal data provided by candidates, collected for the purposes identified in this Call for Applications, takes place in compliance with the provisions of EU Regulation 27.04.2016, n. 679 (General Data Protection Regulation, GDPR) and the information available on page www.unipd.it/informativa-studenti.

Further general information on the current regulations for admission are available on the page https://www.unipd.it/avvisi-ammissione-corsi.
Any changes or additions to the contents of this Call for admission will be:

- published in the official University Bulletin Board;
- published on the University's web pages, at the address www.unipd.it/avvisi-ammissione-corsi

Padua, *17 July 2025*

The Rector
Prof. Daniela Mapelli
Digitally signed pursuant to Legislative Decree no. 82/2005

ANNEX 1 – Topics relating to admission tests

The admission tests are provided for access to years subsequent to the first of the degree programme in Medicine and Surgery, as indicated in point 4.

The following pages indicate the topics for each year of the degree programme:
Admission test 2nd year
Admission test 3rd year
Admission test 4th year
Admission test 5th year

2nd year admission test – topics

CELL BIOLOGY

1) The nucleus: structure of nuclear envelope and nuclear lamina; nuclear import and export
2) Chromatin and gene transcription
3) Gene transcription: RNA polymerase and promoters, post-transcriptional modifications
4) Ribosomes and translation
5) Mitochondria: structure, overview of their functions, mitochondrial DNA, and protein import in mitochondria
6) Peroxisomes: structure, functions, and protein import
7) Endoplasmic Reticulum: structure and general features, functions of smooth ER
8) The secretory pathway 1: protein import in the Rough ER, glycosylation and quality control
9) The secretory pathway 2: the Golgi apparatus, its structure and functions
10) The secretory pathway 3: vesicle trafficking and secretion
11) Endocytosis, endosomes and lysosomes
12) The Cytoskeleton: microtubules, microfilaments, intermediate filaments, and associated proteins
13) The plasma membrane and its specializations: microvilli, cilia, primary cilium
14) DNA replication, repair and recombination
15) Cell cycle and mitosis
16) Meiosis
17) Cell death
18) Autophagy

PHYSICS FOR MEDICINE

• Physical quantities, dimensions and measure's errors.
• Mechanics: motion equations. Kinetic and potential energy. Conservation of energy, momentum and angular momentum.
• Fluids: static fluids. Flow and continuity equation. Fluids and viscosity. Turbulent flow. Surface tension.
• Thermodynamics: heat, specific heat. Ideal gases. Thermodynamic transformations. The first and second principle of thermodynamics.
• Electromagnetism: electrostatics and Gauss' theorem. Circuit elements and application to bioelectric activities in biological systems. Magnetic field and Lorentz force. Magnetic properties of matter. Maxwell's equations.
• Harmonic oscillator. Wave propagation equation. Reflection, refraction and total reflection. Interference. The Doppler effect. Sound and ultrasounds. Fourier analysis. Electromagnetic waves. Light diffraction, dispersion, polarization. The dioptre. Thin lenses: image formation by a thin lens. Optics systems. Optical fibers.
• The atom and the electrons binding energies. Excitation and ionization. The electromagnetic spectrum, ionizing and not ionizing radiation. X-rays and X-ray imaging. The nucleus and the nuclear forces. Radioactivity and radioactive decay law. Gamma cameras and SPECT. Positron emission tomography (PET). NMR.

BIOCHEMISTRY FOR MEDICINE I

• Atoms, elements and compounds. Nucleus and isotopes. Atomic orbitals, electron configuration and periodic properties of the elements.
• Chemical bonds and weak bonds. Valence bond and VSEPR theory. Hybrid orbitals. Resonance.
• Atomic mass unit and the mole. Interpretation and balancing of chemical equations.
• The gaseous state and the gas laws. The liquid state and phase diagrams. Dissolution processes and colligative properties.
• Basics of chemical kinetics. Rates and mechanisms of chemical reactions. Chemical catalysts and enzymes.
• The chemical equilibrium.
• Fundamentals of chemical thermodynamics: enthalpy, entropy and Gibbs free energy.

• Acids and bases. Acid-base equilibrium and pH. Strong and weak acids and bases. Buffer solutions.
• Oxidation-Reduction reactions. Electrochemistry. Reduction potentials and Nernst's equation.
• Alkanes, alkenes and alkynes: nomenclature, classification, isomerism and reactivity.
• Benzene and aromatic compounds. Electrophilic substitution.
• Chirality and chiral molecules. Enantiomers and diastereomers.
• Alkyl halides: nomenclature and reactivity. Nucleophilic substitutions and elimination reactions.
• Alcohols, phenols, ethers and thiols.
• Amines as bases and nucleophiles. Reactions of amines.
• Aldehydes and ketones: nucleophilic addition. Hemiacetals and hemiketals. Imines. Keto-enol tautomerism.
• Carboxylic acids: properties and reactivity.
• Acyl halides, anhydrides, esters and amides.
• Carbohydrates. Structure, isomerism and reactions of monosaccharides. Oligosaccharides and polysaccharides.
• Amino acids and proteins. Peptide bond. Structure of proteins. Protein folding, unfolding and misfolding. Hemoglobin: allosteric effect and Bohr effect. Methemoglobin and carboxyhemoglobin. Fetal and pathologic hemoglobins. Myoglobin and cytochromes. Glycoproteins.
• Lipids and liposoluble vitamins. Saturated and unsaturated fatty acids. Triglycerides, phospholipids, glycolipids, gangliosides. Sterols, cholesterol and steroids.

MOLECULAR BIOLOGY

General concepts and definitions.
Control of gene expression: stages of transcription, promoters, enhancers, prokaryotic sigma factors, eukaryotic transcription factors.
Eukaryotic polymerases: basal transcription, regulation of transcription by transcription factors and chromatin topology.
Combinatorial control of gene expression: Hox genes.
Epigenetics: definitions, DNA and histone epigenetic codes, epigenetic memory and inheritance, techniques, epigenetics and cancer.
Cell differentiation: plasticity, robustness, cell reprogramming with transcription factors and nuclear transplantation.
Non-coding RNA in biology and medicine: microRNA, long non-coding RNA, RNA interference.
Methods in molecular biology with recombinant DNA: basic concepts and techniques, development of cellular and animal models for specific diseases.
Genome Editing: basic and advanced techniques for precise genome editing in vitro and in vivo, bioethical problems associated with genome editing.
Signaling pathways and regulation of gene transcription related to biomedicine: general strategies of cell-cell communication, how growth factors and cytokines regulate gene transcription and cell behavior, description of selected pathways, cellular sensing of biophysical properties.
Principles of genome and transcriptome analysis.
Molecular biology of cancer.

MEDICAL GENETICS

General Aspects and definitions: organization of the human genome, databases and browsers for genomes storage and visualization.
Cytogenetics and chromosomal disorders: structure of chromosomes, chromosomal abnormalities and their molecular bases (NAHR, NHEJ).
Population genetics: Hardy-Weinberg Law, allelic frequencies, genetic drift, founder effect, selection. Haldane's Law.
Mendelian Disorders: classification of mutations and their nomenclature, Molecular bases of dominance and recessivity, Genetic linkage.

Non-Mendelian Monogenic Disorders: mitochondrial genetics, triplet expansion disorders, genomic imprinting disorders, diagnostic techniques.
Basic concepts of genetic diagnosis: standard cytogenetic and molecular techniques, estimation of genetic risk.
Multifactorial disorders: genes and environment, polygenic inheritance, quantitative traits, hereditability, twin studies, redictive tests.
Genetics of Tumors: proto-oncogenes and tumor suppressor genes.
Pharmacogenetics and Pharmacogenomics.
Clinical epigenetics.
Therapy for genetic diseases. Gene therapy, stem cells, and pharmacological approaches.
Selected examples of genetic diseases. Facioscapulohumeral Dystrophy Type I and II. miRNA mutations Spinal muscular atrophy. Cystic fibrosis.

BIOCHEMISTRY FOR MEDICINE II
1. Structure and function of enzymes
2. Thermodynamic and kinetic basis of cell metabolism
3. Nutrient transformations during catabolic and anabolic metabolism, and the associated energy exchanges
4. Nucleic acid and porphyrin metabolism
5. Transcriptional and post-transcriptional regulation of cell metabolism

Enzymology, bioenergetics and metabolic energy conservation, oxygen usage, redox reactions, carbohydrate metabolism, TCA cycle, lipid metabolism and plasma lipoproteins, nitrogen metabolism and amino acid synthesis, nucleic acid synthesis, regulatory mechanisms including transcriptional and post-transcriptional mechanisms, systemic hormonal regulation of tissue metabolism.

3rd year admission test – topics

INFECTION
Bacteriology and mycology:
- The microbiota and the environment.
- Microbes and man. Microbial classification.
-Host-microbe relationships: parasitism, commensalism, mutualism. Microbial colonization.
- Principles of microbial pathogenicity.
-Ways of transmission of infectious agents
-Bacteria: morphology and structures of bacterial aggregation. Bacterial ultrastructure.
- Bacterial metabolism.
-The bacterial spore: spore genesis and germination of the spore.
-Microbes, anatomical defenses, non-specific defenses, innate and adaptive immune system.
- Serums and vaccines. Principles of prophylaxis and prevention.
- Bacterial toxins.
- Antibiotics: classification, structure, spectrum of action, bacteriostatic / bactericidal action. Antibiotic target and toxicity. Association between antibiotic drugs: principles and effects.
- Microbial resistance to antibiotic drugs: diffusion. The antibiogram.
- Congenital, perinatal and postnatal infections
- Sexually transmitted bacterial and fungal diseases
-Respiratory infections.
-Infections transmitted by insects and ticks.
-Bacterial and fungal infections of the central nervous system.
-Sepsis.
- Bacterial infections of the gastrointestinal tract.
- Bacterial and fungal skin infections.
- Morphological-structural characteristics of mycetes and fungal infections. Superficial fungal infections and deep infections. Antifungal drugs and their action.

- Laboratory diagnosis of microbial infections.

Virology:
- Taxonomy, morphology and structure
- Virus-cell relationships and viral replication
- Genetics of viruses
- Virus culture and titration
- Mechanism of action of interferon and cytokines
- Virus-host relationships
- Cellular transformation and oncogenesis
- Antigenic properties of virions
- Transmission and pathogenesis of infections
- Virological diagnostics
- Classification and mechanism of action of antiviral drugs

Systematics: Papillomavirus, Polyomavirus, Herpesvirus, Adenovirus, Parvovirus, Poxvirus, Hepadnavirus. Picornavirus, Coronavirus, Orthomyxovirus, Paramyxovirus, Pneumovirus, Rabdovirus, Filovirus, Hepatitis Virus, Gastrointestinal Virus, Retrovirus, viruses transmitted by arthropods / rodents: Bunyavirales, Arenaviridae, Togavirus, Flavivirus.

Parasitology:
Intestinal and urogenital protozoa. Blood and tissue protozoa.
Metazoa. Nematodes, Cestodes, Trematodes.

IMMUNITY
a) Immunology:
- The immune system
- Innate immunity
- The major histocompatibility complex (MHC) and antigen-presenting cells (APC)
- Molecules with receptor function: the receptor for the antigen of T lymphocytes (TCR)
- T lymphocytes: antigen recognition and lymphocyte activation
- Molecules with receptor function: the receptor for the antigen of B lymphocytes (BCR) and immunoglobulins (Ig)
- B lymphocytes: antigen recognition and lymphocyte activation
- The complement system: the classical pathway
- Effector phase of the immune response

b) Immunopathology:
- Hypersensitivity reactions, general aspects and classification according to Gell and Coombs
- Type I reactions, allergies
- Type II reactions and notions of immunohematology
- Type III reactions and immune complex diseases
- Type IV reactions
- Autoimmunity and autoimmune diseases. Mechanisms of autoimmune diseases.
- Immunity and tumors. Tumor antigens. Cancer immune response.
- Cancer immunotherapy. New modalities of immunological tumor therapy.
- Immunity and transplants
- Vaccines and principles of vaccinotherapy

HUMAN ANATOMY
Locomotor system: classification, morphology of the bones and muscles; sinartroses and diartroses; osteo-artrology and muscles of the spine, thorax (intrinsic and extrinsic muscles, diaphragm), abdomen (including the inguinal canal), pelvis (perineum and pelvic diaphragm), and neck (fasciae

and muscles). Osteo-artrology and muscles of the upper and lower limbs; and nerves of the upper and lower limbs.

Heart: morphology; position and orientation; internal and external configuration; topography and relationship with the surrounding structures; structure of the cardiac wall; electric conduction system of the heart; vessels and nerves of the heart; pericardium.

Vessels: general characteristics, portal systems, atero-venous anaostomoses; fetal circulation; pulmonary trunk and its branches; pulmonary veins; Aorta: degree programme, collateral branches and terminal branches; Superior and inferior vena cava; azygos system; portal vein; Porto-Caval Anastomoses; Arterial circulation of the head and trunk.

Splanchnology: macroscopic, microscopic, topographic and clinical anatomy of the viscera. Respiratory system: morphology of the airways, lungs, pleura. Digestive system: oral cavity, salivary glands, pharynx, esophagus, stomach, small and large intestine, liver and gallbladder, pancreas. Peritoneum: structure, peritoneal reflections and spaces. Urinary system: kidneys, ureters, bladder, urethra. Male genital system: testicle, external genitalia. Female genital system: vagina, uterus, fallopian tubes, and ovaries, external genitalia, breast. Endocrine system: pituitary gland, thyroid gland, parathyroid gland, pancreatic isles, adrenal glands

Lymphatic system: lymph and lymphatic vessels; thoracic duct; lymph nodes of the head, neck, thorax, abdomen and limbs. Timus, spleen, lymph nodes and tonsils.

HUMAN PHYSIOLOGY
CARDIOVASCULAR PHYSIOLOGY
The Heart
Cardiac Muscle; The Heart as a Pump and Function of the Heart Valves, Rhythmical Excitation of the Heart. The Normal Electrocardiogram. Electrocardiographic Interpretation of Cardiac Muscle and Coronary Blood Flow Abnormalities: Vectorial Analysis. Cardiac Arrhythmias and their Electrocardiographic Interpretation

The Circulation
Overview of the Circulation; Biophysics of Pressure, Flow, and Resistance. Vascular Distensibility and Functions of the Arterial and Venous Systems.
The Microcirculation and Lymphatic System: Capillary Fluid Exchange, Interstitial Fluid, and Lymph Flow
Local and Humoral Control of Tissue Blood Flow. Nervous Regulation of the Circulation, and Rapid Control of Arterial Pressure. Role of the Kidneys in Long-Term Control of Arterial Pressure and in Hypertension: The Integrated System for Arterial Pressure Regulation.
Cardiac Output, Venous Return, and Their Regulation.
Muscle Blood Flow and Cardiac Output During Exercise; the Coronary Circulation and Ischemic Heart Disease. Cardiac Failure. Heart Valves and Heart Sounds; Valvular and Congenital Heart Defects
Circulatory Shock and Its Treatment. Red Blood Cells, Anemia, and Polycythemia. Blood Types; Transfusion; Tissue and Organ Transplantation. Hemostasis and Blood Coagulation

THE BODY FLUIDS AND KIDNEYS
The Body Fluid Compartments: Extracellular and Intracellular Fluids; Oedema. Urine Formation by the Kidneys: I. Glomerular Filtration, Renal Blood Flow,and Their Control.
Urine Formation by the Kidneys: II. Tubular Reabsorption and Secretion. Urine Concentration and Dilution; Regulation of Extracellular Fluid Osmolarity and Sodium Concentration.
Renal Regulation of Potassium, Calcium, Phosphate, and Magnesium; Integration of Renal Mechanisms for Control of Blood Volume and Extracellular Fluid Volume. Acid-Base Regulation. Diuretics, Kidney Diseases.

RESPIRATORY PHYSIOLOGY
Structure and function of pulmonary system. Pulmonary ventilation. Pulmonary Circulation, Pulmonary Edema, Pleural Fluid. Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide through the Respiratory Membrane. Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids. Regulation of Respiration. Respiratory Insufficiency—Pathophysiology, Diagnosis, Oxygen Therapy. Respiratory system regulation during exercise. Test of pulmonary function. The measure of non mobilizable volumes.

GASTROINTESTINAL PHYSIOLOGY
General Principles of Gastrointestinal Function—Motility, Nervous Control, and Blood Circulation Propulsion and Mixing of Food in the Alimentary Tract. Secretory Functions of the Alimentary Tract. Digestion and Absorption in the Gastrointestinal Tract. Physiology of Gastrointestinal Disorders. The Liver as an Organ.

ENDOCRINOLOGY AND REPRODUCTION
Introduction to Endocrinology. Pituitary Hormones and Their Control by the Hypothalamus. Thyroid Metabolic Hormones. Adrenocortical Hormones. Endocrine Functions of the Pancreas & Regulation of Carbohydrate Metabolism. Hormonal Control of Calcium & Phosphate Metabolism & the Physiology of Bone. Reproductive and Hormonal Functions of the Male (and Function of the Pineal Gland). Female Physiology Before Pregnancy and Female Hormones. Pregnancy and Lactation.

NERVOUS SYSTEM
1) Basic Neurophysiology; brain circulation, glymphatic system, metabolism-astrocytes-neurons coupling; inhibitory system and role of GABA during nervous system maturation
2) Introduction to sensory physiology, difference between sensation and perception
3) Visual system - structure and function of the retina, visual pathways, cortical processing of retinal inputs
4) Auditory system - structure and function of the ear, acoustic pathways, localization of sound sources
5) Vestibular system
6) Proprioception and nociception
7) Olfaction and taste
8) Voluntary movement - cortical control, basal ganglia, cerebellum, posture, balance, disorders of movement
9) Autonomic nervous system and reflexes
10) The hypothalamus - integrated control of vegetative functions
11) Physiology of cortical states - sleep, wakefulness, rhythms of the electroencephalogram
12) Emotion and limbic system
13) The thalamus - control of information flow to the cerebral cortex
14) Neural plasticity
15) Critical periods in the development of cortical functions
16) Learning and memory
17) Language

4th year admission test – topics

DIAGNOSTIC TESTING

• Biochemical and molecular basis of the main diseases and principles of analytical methodologies. • Analytical and biological variability, precision and analytical accuracy, and diagnostic accuracy. Prescriptive appropriateness. Diagnostic errors and systems for their prevention. Issues of the request and interpretation of the main biomarkers and their value in cardiovascular, neoplastic diseases.• Diabetes and glyco metabolism

• Thyroid, adrenal glands, pituitary function.
• Bone and connective tissue, calcium-phosphate metabolism
• Blood cells, anaemia and iron metabolism.
• Coagulation system.
• Liver function and bilirubin.
• Analysis of biological fluids (blood, urine, bile, amniotic fluid, saliva. Pleural, peritoneal, pericardial, synovial effusions).
• Principles of microbiological diagnosis: pre-analytical, analytical and post-analytical phases;
• Interpretation of anti-microbial susceptibility tests;
• Microbiological diagnosis applied to respiratory tract infections; urinary tract infections; central nervous system infections; septicemia, endocarditis, catheter-related infections; gastroenteritis; exually-transmitted infections; infections of skin, bones and soft tissues.
• Genetic tests: Definition and Classification. Classical cytogenetics tests: karyotype analysis; Molecular cytogenetic tests (FISH, Array-CGH). Molecular Genetic tests: MLPA, Sequencing (Sanger and Next Generation Sequencing - NGS). Applications of NGS in the diagnosis of monogenic diseases (gene panels, exome analysis, and genome analysis). Direct and indirect analysis. Mosaicism: problems related to genetic tests.
• Variant Interpretation: Techniques employed for validating mutations: i) ACMG criteria; ii) In silico analyses; iii) Functional data (expression systems, hybrid minigenes, animal models)
• Genetic counseling: Family history and construction of a pedigree. Types and indications for genetic counseling. Risk Calculation for genetic disorders
• Invasive prenatal diagnosis: Definition. Indications for invasive prenatal diagnosis. Techniques (chorionic villus sampling, amniocentesis). Prenatal genetic tests. Mosaicism
• Non-invasive prenatal diagnosis (screening tests and cffDNA analysis): Definition and Classification. Circulating free fetal DNA and its applications
• Population screenings (pre and postnatal).

MECHANISMS OF DISEASE I
CELLULAR AND MOLECULAR PATHOLOGY
Agents causing cell damage.
Physical agents: ionizing radiations and UV light.
Chemical agents: poisons, drugs, others. ROS and oxidative stress.
Biological damage: bacterial toxins.

Cellular response to cell damage and stress.
Reversible and irreversible cellular damage (adaptation and cell death).
Cellular adaptations including autophagy, atrophy, hypertrophy, hyperplasia, metaplasia and dysplasia. Cellular stress responses and organelles (UPR, mtUPR, ISR). Metabolic stress, the cellular basis of metabolic syndrome. Cellular deposits: steatosis, amyloidosis, proteotoxic neurodegenerative diseases (Alzheimer's, Parkinson's, Huntington's disease).
Different types of cell death. Regulated (apoptosis, necrosis, necroptosis and other forms) and accidental cell death

Molecular basis of genetic disease (examples of monogenic diseases: Examples of monogenic diseases and new therapeutic frontiers: Marfan syndrome, Familial hypercholesterolemia, Cystic fibrosis, Muscular dystrophies, Glycogenosis, Defects of amino acid metabolism.)

TISSUE RESPONSES TO INJURY: THE INNATE IMMUNE SYSTEM AND INFLAMMATION
The innate immune system and disease. Immune signalling
Acute inflammation: vascular and cellular phenomena.
Chemical mediators of inflammation.
Inflammosome and auto-inflammatory diseases.
The systemic effects of inflammation.
Chronic inflammation.

The healing process. Resolution, regeneration, repair. Fibrosis. Sclerosis.
New therapeutic strategies of the inflammatory process.

ONCOLOGY Cancer as a multi-factorial and multi-step disease.
Ethiology of cancer: exogenous factors (chemical, physical, infectious agents): endogenous factors (genetic, epigenetic, hormonal).
Molecular pathogenesis of tumors: proto-oncogenes (mechanisms of activation and downstream effects). Tumor suppressor genes (functions and mechanisms of inactivation).
The cancer cell: alterations of the replicative potential and programmed cell death mechanisms.
Tumor angiogenesis
Tumor metabolism
Invasion and metastasis
Clinical applications: molecular diagnostics
Precision oncology: concepts and relevant examples

MECHANISMS OF DISEASE II
Pathophysiology of thermoregulation: Febrile and non-febrile hyperthermia
• Pathophysiology of the cardio-vascular system. Hypoxia, ischemia and heart attack
• Heart failure
• Acute cardiogenic and non-cardiogenic pulmonary edema
• Pathophysiology of the respiratory system. Respiratory failure
• The shock
• Pathophysiology of the blood. Anemias and polyglobulias
• Pathophysiology of hemostasis
• Pathophysiology of the kidney. Acute and chronic renal failure
• Pathophysiology of hydro-electrolyte balance. The edemas
• Pathophysiology of acid-base balance
• Physiopathology of phospho-calcium balance
• Pathophysiology of the liver. Hepatic insufficiency, portal hypertension
• Endocrine and metabolic pathophysiology
• Pathophysiology of skeletal muscle
• Immunopathology
• General pathology of infectious diseases
• Translational medicine: from pathogenesis to therapy

PHYSICAL SIGNS AND CLINICAL METHODOLOGY
Approach to a patient
History Taking
Head-to-toe assessment (adult and older adult)
General survey and vital signs
Skin
Head, eyes and ears
Nose, mouth and neck
Thorax and lungs
Cardiovascular system
Peripheral vascular system
Breasts and axillae
AbdomenMusculoskeletal system
Nervous system (cranial nerves, motor system, sensory system, reflexes)

Principles of radiation protection
Fundamentals of the various radiological techniques:
- X-ray
- Ultrasound

- Computed Tomography
- Magnetic Resonance Imaging
- Interventional Radiology

THERAPEUTIC MOLECULES: GENERAL PROPERTIES
MEDICINAL CHEMISTRY
Types of drugs: "small molecules" vs "biologics", organic synthesis vs biotechnology; generic vs biosimilars. Principles of drug discovery process; lead compounds discovery and optimization; structure-activity relationship studies.
Chemical scaffolds for the discovery and design of novel therapeutics, the use of isosteric replacement in drug designs; Case studies analysis: peptidomimetics.
Target based drug discovery and targeted compounds; case studies of targeted small molecules development (Influenza sialidase inhibitors) and targeted biologics (Monoclonal antibodies).
Discovery and development of drugs from natural sources.
Random screening and phenotypic screening drug discovery: case studies from old and recent literature.

PHARMACEUTICAL TECHNOLOGIES
Routes of administration (oral, parenteral, pulmonary, transcutaneous, organ administration), systemic or local action.
Role of the formulation in the availability, absorption, bioavailability of drugs and their stabilization.
Different pharmaceutical forms - Roles of excipients in formulations with some examples.
Reference to the European Pharmacopoeia and the main essays for medicinal products.
Concepts of stability and sterility for medicinal products.
Special formulations (gastro-resistant, retard, prolonged action).
Differences between classical and biotechnological drug formulations.

PHARMACOLOGYPharmacokinetics - Passing of drugs across biological membranes. Routes of drug administration, absorption, distribution, elimination (excretion, metabolism). Quantitative pharmacokinetics: orders and kinetic constants, compartmental models, pharmacokinetic parameters (bioavailability, apparent volume of distribution, half-life, clearance), steady state principle. Dosage rhythms.
Pharmacodynamics - Definition of drug and pharmacological action, dose-effect relationship, relationship between drugs and their receptors (agonists, antagonists and inverse agonists), actions on biological receptors located on the plasma membrane, on intracellular receptors, on transporters, on ion channels, on enzymes, on nucleic acids, non-receptor-mediated actions. Quantitative analysis of drug-receptor interaction. Toxicity of drugs: mechanism-dependent and idiosyncratic adverse reactions. Clinical trial on drugs.
Chemotherapy drugs. General principles of chemotherapy. Antibacterial drugs

5th year admission test – topics

BLOOD DISEASES AND CLINICAL PHARMACOLOGY
Hematological Oncology
Systematic treatise of the main oncological blood disorders.
Classification, epidemiology, clinical and laboratory evaluation, diagnosis and therapy.
Stem cell diseases (aplastic anemia, myeloprolipherative diseases, paroxystic nocturnal hemoglobinuria, myelodysplastic syndromes). Acute leukemias and myelodysplastic syndromes.
Chronic leukemias and myeloproliferative neoplasms
Differential diagnosis of lymphadenopathies
Lymphoprolipherative diseases
Hodgkin and non Hodgkin Lymphomas
Multiple Myeloma and paraproteinemias and other plasma cell disorders
Diseases of the platelets

Transplants, in particular of the bone marrow

Internal Medicine and Haemorraghic and Thrombotic disorders
Disease of the coagulation and thrombosis, including thrombotic and hemorrhagic diseases. Venous thromboembolism: acquired and congenital risk factors, clinical manifestations, diagnostic process and main therapeutic approaches.
Haemorrhagic conditions: acquired and congenital haemorrhagic diseases; coagulation tests used to identify main bleeding disorders, principles of therapy.
Clinical-laboratory conditions named "complex coagulopathies" characterized by the coexistence of a thrombotic and haemorrhagic phenotype.

Clinical Pharmacology
Anti-inflammatory drugs: NSAID and corticosteroids
Cardiovascular pharmacology: drugs to treat hypertension, heart failure, and angina.
CNS drugs: antidepressant, anxiolytics, antipsychotics, opioids.
Drugs for the treatment of GI and respiratory diseases

CLINICAL NEUROSCIENCES
The Clinical Method in Neurology: approach logic and history; examination; diagnostics. Cardinal Manifestations of Neurological Diseases: Disorders of Movement; Pain and Other Disorders of Sensation; Disorders of Consciousness and Epilepsy; Disorders of Cognitive Function & Speech; Delirium; Dementia Major Categories of Neurologic Disease Degenerative Diseases Primary dementia: AD, FTD, LBD; Dementia+: Huntington's; CBD Primary Movement: PD; PSP; MSA; Primary Ataxia: Friedrich Ataxia; Primary Weakness: ALS, SMA. Cerebrovascular Diseases Stroke: epidemiology, risk factors, pathogenesis, syndromes, treatment; Intra-cerebral hemorrhages: etiology, location, treatment; Subarachnoid hemorrhage: presentation, causes, treatment; Multiple Sclerosis & Neuroinflammation Multiple Sclerosis: relapsing remitting; progressive I or II; NMO, ADEM Tumors: Classification, pathogenesis, symptoms; treatment Trauma: Classification, pathogenesis, symptoms, treatment, sequelae; mild TBI Spinal Cord Disease:Acute traumatic spinal cord injury; Spondylosis; Myelitis Chronic/progressive: MS Viral, Bacterial, Inflammatory; Infarction; Functional NeurosurgeryInfections & Para-neoplastic Metabolic, Nutritional, Alcohol, Drugs Electromyography, Nerve Conduction Studies; Neuromuscular junction: myasthenia Peripheral Neuropathies Myopathies

The clinical method in psychiatry: psychopathology, mental status examination, diagnostic classifications.
Etiopathogenesis, clinical and prognostic features, epidemiology, prevention, pathophysiology, neuropsychological and neuroimaging correlates, biological and psychotherapic treatments of the main psychiatric diseases:- Delirium and Dementia;- Alcohol and substance abuse/dependance and correlated diseases;- Schizophrenia and schizophrenia-spectrum disorders;- Mood disorders;- Anxiety disorders;- Obsessive-compulsive spectrum disorders;- Dissociative disorders;- Somatic symptom and related disorders;- Suicidal behavior;- Eating disorders;- Personality disorders;- Trauma and stressor-related disorders;- Biological treatments;- Psychotherapy in psychiatry.

GASTROINTESTINAL AND URINARY TRACT DISEASES
Urinary tract diseases
- Renal physiology
- Renal pathophysiology
- The role of color Doppler ultrasound in nephrology: an essential tool for assessing patients with acute and chronic kidney disease
-Lab tests in nephrology
- Acute kidney injury (AKI): definition, staging, epidemiology prevention, diagnosis, treatment, follow-up
- Critical Care Nephrology: AKI in critical care settings, the role of the nephrologist in intensive care

- Extracorporeal purification in AKI and its applications in intensive care
- Chronic kidney disease (CKD): definition, epidemiology, prevention, diagnosis, staging, treatment, follow-up- Techniques for Kidney replacement therapies in chronic patients: extracorporeal dialysis, peritoneal dialysis, and kidney transplantation
- Conservative therapy for CKD

Urology- Introduction to urology; Symptoms in urology
- Benign prostate hypertrophy
- Prostate cancer
- Bladder cancer
- Kidney cancer
- Testicular cancer
- Pelvic organ prolapse
- Urolithiasis
- Urinary infections

GI tract diseases
Topics included the following:
- Oesophageal pathophysiology and related symptoms; oesophageal motor disorders; gastro-oesophageal reflux diseases; oesophagitis; oesophageal neoplasms and precancerous lesions
- Gastric pathophysiology; dyspepsia; Helicobacter Pylori infections and related diseases; chronic gastritis and gastropathies from drugs; precancerous lesions and gastric cancer
- Intestinal pathophysiology; irritable bowel syndrome, chronic constipation; diarrhoea; celiac diseases; food allergies and intolerances; diverticular diseases; colorectal neoplasm; inflammatory bowel diseases
- Liver function and mechanisms of acute and chronic hepatic injury; natural history of liver disease; Diagnostics; viral hepatitis; alcohol-related liver diseases; metabolic liver diseases; autoimmune hepatitis; storage liver diseases; Drug-induced liver injury; Liver cirrhosis and its complications; hepatocellular carcinoma; liver transplantation.
- Cholestasis, Cholelithiasis and gallstone diseases; acute and chronic pancreatitis; neoplasms of the biliary tract; Pancreatic Cancer
- Gastrointestinal emergencies: GI bleeding, Acute liver failure, acute abdomen

General surgery
- Surgical aspects of oesophageal and gastric diseases
- Surgical treatment of gallstones disease
- Hepatobiliary surgery and liver transplant 1
- Hepatobiliary surgery and liver transplant 2
- Colorectal surgery

Clinical Nutrition
The degree programme provides an integrated overview of the physiological requirements and functions of energy, macronutrients and the major vitamins and minerals that are determinants of health and diseases in human populations. The interplay of nutrients with the physiological functioning of human body will be described in the transdisciplinary context of systemic approach. Topics include the following:
- Dietary sources, intake levels, physiological role, and requirement of major nutrients.
- Composition of the main foods.
- Energy needs and nutrient into adulthood
- Regulation of nutrients intake and utilization.
- Assess nutritional status at a clinical and epidemiological level
- Malnutrition: definition, causes, type (chronic or acute). Screening for malnutrition and assessment of nutritional status.

- Indications for artificial nutrition (therapeutic objectives, routes of administration of enteral and parenteral nutrition, indications and contraindications, complications) in gastrointestinal and urinary tract diseases.

EndocrinologyIntroduction to endocrinology, pathophysiology of the endocrine system, prevalence and impact of the most frequent endocrine diseases, hormone assessment and dynamic testing, rare endocrine diseases.

HEART AND LUNG DISEASES
Respiratory medicine
- Asthma
- Chronic obstructive pulmonary disease
- Pneumonia
- Tuberculosis
- Bronchiectasis
- Interstitial lung disease and Covid-19-related pulmonary fibrosis
- Lung cancer
- Pleural disease
- Principles of lung function test and interpretation of arterial blood gas analysis
- Clinical cases with interactive discussion

Cardiology
i. Brief review of cardiovascular anatomy and physiology. Principles of electrocardiography
ii. First approach to the patient. Diagnostic test in cardiology.
iii. Coronary artery disease: acute and chronic coronary syndrome and myocardial infarction
iv. Heart failure: classification and therapy
v. Non-ischemic cardiomyopathies
vi. Cardiac biomarkers and rare cardiac diseases
vii. Valve heart diseases and interventional cardiology
viii. Congenital heart diseases
ix. TakoTsubo, myocarditis, pericarditis, endocarditis
x. Arrhythmias and Pulmonary Embolisms

Thoracic surgery
- Tumor lung staging
- Pleural diseases
- Mediastinal diseases
- Thoracic trauma

Vascular surgery
- Principles in vascular surgery
- Atherosclerotic obstructive disease
- Supraaortic cerebro-vascular insufficiency
- Aortic Aneurysmal and dissective diseases

Cardiac surgery
- Principles of cardiopulmonary bypass and principles of myocardial and cerebral protection
- Heart valve diseases: current indications for surgical treatment, surgical techniques and results
- Myocardial revascularization: off pump, on pump, surgical techniques and results
- Surgical treatment of heart failure: the role of CABG, mitral valve repair, ventricular remodeling
- Surgical treatment for end-stage heart failure: Heart transplant and Mechanical circulatory support
- Aortic aneurysms and acute aortic dissection: current indications, surgical techniques and results
- The concept of minimally invasive and microinvasive cardiac surgery
- AI and the adoption of technical innovations in cardiac surgery