CALL FOR ADMISSION

YEAR 2 ONWARDS

for a Single-cycle degree course

with limited places taught in English:

MEDICINE AND SURGERY
## SUMMARY OF DEADLINES 2024

**Medicine and Surgery – Year 2 Onwards**

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply for Recognition of Prior Learning</td>
<td>From 19 June to 18 July</td>
</tr>
<tr>
<td>Publication of Suitable Applicants for Year 2 Onwards</td>
<td>From 2 September</td>
</tr>
<tr>
<td>Pre-enrol for Admissions Test</td>
<td>From 2 to 12 September</td>
</tr>
<tr>
<td>Publication of Admissions Test Instructions</td>
<td>Information on test venue will be published on 18 September</td>
</tr>
<tr>
<td>Admissions Test</td>
<td>Admissions test is on September 20</td>
</tr>
<tr>
<td>Enrolment</td>
<td>Merit list published: 25 September from 3:00 pm</td>
</tr>
<tr>
<td>Places reassigned 1</td>
<td>Next on merit list called 7 October</td>
</tr>
<tr>
<td>Places reassigned 2</td>
<td>Next on merit list called 15 October</td>
</tr>
</tbody>
</table>
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PREAMBLE

The University of Padova is selecting applications for admission to Year 2 onwards of its English-language Single-cycle degree course in Medicine and Surgery for academic year 2024/2025. This selection procedure is open only to applicants who:

- have already submitted an application to have their prior learning assessed (Article 15 of the Student Careers Regulation issued with Regional Decree 2125/2020 of 25/06/2020)
- have received a decision that they are eligible for admission to Year 2 onwards.

Note that applicants will only be admitted when places are available for the year they are applying for.

N.B.: the procedures and deadlines of this call for admission are to be considered provisional pending publication by the Italian Ministry of University and Research (MUR) of its annual Ministerial Decree detailing the methods of admission to Year 1 of this English-language Single-cycle degree course in Medicine and Surgery. The decree also contains general instructions for the assignment of available places for Year 2 onwards. If changes to this call for admission are necessary, they will be announced as per point 6.

1. AVAILABLE PLACES

Listed below is the number of places that has become available on the degree course in Medicine and Surgery for academic year 2024-2025 after students have dropped out, transferred to another university, or switched to another degree course:

- Year 2: No places available
- Year 3: 4 places
- Year 4: 2 places
- Year 5: 2 places
- Year 6: 1 place

2. SUBMISSION OF APPLICATION FOR RECOGNITION OF PRIOR LEARNING AND ASSESSMENT BY COMMISSION

Pursuant to Art. 15 of the Student Careers Regulation issued by Regional Decree 2125/2020 of 25/06/2020, all applicants wishing to have their prior learning recognised for admission to this accelerated English-language Single-cycle degree course in Medicine and Surgery with limited places must have submitted their application for assessment of prior learning between 19 June and the 4:00 pm deadline on 18 July 2024, as per the instructions at www.unipd.it/domanda-valutazione.
The commission receives the prior learning assessment applications and, in accordance with current degree course regulations, establishes recognised activities and credits, and decides the year for which applicants are eligible. Applicants will receive authorisation to see their decision online. Applicants are required to submit documentation of their activities (e.g. programmes, and academic field and discipline when possible). The commission will assess only activities completed and registered at the applicant's prior university by the time the application is submitted.

Enrolment in Year 2 onwards by applicants from EU or non-EU universities will depend on an assessment of the course track pursued at their prior university, especially regarding degree-course content, examinations passed, theoretical studies completed, and practical experience.

For certain subjects, the commission can seek the advice of the heads of the individual course units and modules.

3. ADMISSION TO YEAR 2 ONWARDS

3.1 Eligibility

Admission to a year from Year 2 onwards requires a minimum number of recognised ECTS (see table below) and is decided by a commission that assesses applicants’ prior learning in accordance with Annex 3 "Regulations for the Recognition of University Credits (ECTS)" https://didattica.unipd.it/off/2023/CU/ME, which is part of the regulations governing this Single-cycle degree course in Medicine and Surgery.

<table>
<thead>
<tr>
<th>Eligibility for Course Year</th>
<th>Minimum No. of University Credits (ECTS) Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>30</td>
</tr>
<tr>
<td>Year 3</td>
<td>80</td>
</tr>
<tr>
<td>Year 4</td>
<td>130</td>
</tr>
<tr>
<td>Year 5</td>
<td>180</td>
</tr>
<tr>
<td>Year 6</td>
<td>230</td>
</tr>
</tbody>
</table>

3.2 Online Admissions Test and Pre-enrolment

When the number of eligible applicants for Year 2 onwards exceeds the number of places available for the related year, an online admissions test will be held remotely on 20/09/2024 at 1:00 pm and a merit list drawn up on the basis of the results.

A list of applicants eligible to sit the test, divided by the year they are applying for, will be published from 02/09/2024 at https://www.unipd.it/ammissioni-medicine-surgery.

Information detailing the online test procedure will be published at https://www.unipd.it/ammissioni-medicine-surgery by 18 September 2024. This information includes:
- the times applicants need to be online;
- the devices and minimum technical specifications required to take the test;
- test procedures and regulations;
- how to test the procedure beforehand to ensure that the admissions test works correctly.

**Important:** the publication of this information is official notification for applicants.

Applicants wishing to sit the admissions test for the year established by the decision in point 2 of this call for admission are required to **pre-enrol** on the Uniweb portal at www.uniweb.unipd.it from 3:00 pm on 2 September 2024 to 12:00 pm on 12 September 2024.

Applicants without log-in credentials for the Uniweb portal www.uniweb.unipd.it will need to register at https://uniweb.unipd.it/AddressBook/ABStartProcessoRegAction.do

At the end of the registration process, applicants will be emailed a username and an activation code. They will then need to go to https://uniweb.unipd.it/password/index.php/it/utenti/identifica/azione/a, choose three security questions, and set a password.

Applicants can then log in to their profile at https://uniweb.unipd.it with their username and password.

After logging in, applicants can complete their **pre-enrolment application** by clicking on *Home → Admission test → Course Type: “6-year Single-cycle degree” → Admissions to Year 2 onwards of the Single-cycle degree course in Medicine and Surgery”.*

**After the 12:00 pm deadline on 12 September 2024**, the link will be disabled and applicants will no longer be able to apply to sit the test.

The service may be temporarily unavailable during maintenance operations.

If applicants have any difficulty during the enrolment process, they can call the University call centre on + 39 049 8273131 from Monday to Friday from 9:00 am to 5:00 pm, or send an email to immatricolazioni.studenti@unipd.it.

The test consists of **60 multiple-choice questions in English**. Each question has four options. Only one option is correct. The questions will be on the subjects included in the University of Padova degree course regulations for the year or years that precede the one being applied for.

The test is prepared by the examination commission and covers the subjects stated in the table below:

The programmes are listed in **Annex 1**, which is an integral part of this call for admission.

Applicants have **90 minutes to complete the test**. The test will be corrected by the related commission and scored as follows:

- 1 point for every correct answer
• minus 0.25 points for every incorrect answer
• 0 points for every unanswered question.

Should two applicants achieve the same score, then the place will be awarded to the one with the most credits for examinations or activities completed by the deadline for submitting the prior learning application, as recognised by the evaluating commission.

In the event that both applicants still have the same score, the place will be awarded to the younger of the two.

The test is prepared by the examination commission and covers the subjects stated in the table below:

<table>
<thead>
<tr>
<th>AMMISSIONE AL 3° ANNO/ADMISSION TO YEAR 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argomenti/Subjects</td>
</tr>
<tr>
<td>Infection</td>
</tr>
<tr>
<td>Immunity</td>
</tr>
<tr>
<td>Human Anatomy</td>
</tr>
<tr>
<td>Human Physiology</td>
</tr>
<tr>
<td>Nervous System</td>
</tr>
<tr>
<td><strong>Total questions</strong></td>
</tr>
</tbody>
</table>
## AMMISSIONE AL 4° ANNO/ADMISSION TO YEAR 4

<table>
<thead>
<tr>
<th>Argomenti/Subjects</th>
<th>n. quesiti/no. of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Testing</td>
<td>10</td>
</tr>
<tr>
<td>Mechanism of Diseases I</td>
<td>30</td>
</tr>
<tr>
<td>Mechanism of Diseases II</td>
<td></td>
</tr>
<tr>
<td>Physical Signs and Clinical Methodology</td>
<td>10</td>
</tr>
<tr>
<td>Therapeutics Molecules: General Properties</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total questions</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

## AMMISSIONE AL 5° ANNO/ADMISSION TO YEAR 5

<table>
<thead>
<tr>
<th>Argomenti/Subjects</th>
<th>n. quesiti/no. of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Diseases and Clinical Pharmacology</td>
<td>13</td>
</tr>
<tr>
<td>Clinical Neurosciences</td>
<td>16</td>
</tr>
<tr>
<td>Gastrointestinal And Urinary Tract Diseases</td>
<td>17</td>
</tr>
<tr>
<td>Heart and Lung Diseases</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total questions</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>
AMMISSIONE AL 6° ANNO/ADMISSION TO YEAR 6

<table>
<thead>
<tr>
<th>Argomenti/Subjects</th>
<th>n. quesiti/no. of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>13</td>
</tr>
<tr>
<td>Mother and Child</td>
<td>19</td>
</tr>
<tr>
<td>Muscle and Bones</td>
<td>11</td>
</tr>
<tr>
<td>Public Health</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total questions</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

3.3 Customised Tests for Applicants with Disabilities or Learning Disorders

Pursuant to Article 16 of Italian Law no. 104/1992 and Law no. 170/2010, applicants with a disability or a specific learning disorder (SLD) can ask the Student Services Office – Inclusion department for an admissions test with additional time and/or customised support. To this end they need to:

1. request a customised test when **pre-enrolling** on Uniweb, specifying the support, aids or additional measures required. Any additional time granted may not exceed 50% (applicants with disabilities) and 30% (applicants with SLD) of the total test time;

2. **email** inclusione.studenti@unipd.it **by 12 September 2024**, attaching the following documentation:
   - a **civil disability certificate, and/or certification** issued by the competent local medical commission, pursuant to Italian Law no. 104 of 1992, including the disability type and a diagnosis, plus disability level where applicable.
   - an **SLD certified diagnosis** no more than 3 years old if issued before the applicant's 18th birthday, or a diagnosis issued after the applicant's 18th birthday by local health authorities, or by bodies or professionals accredited by the regional health service. **When unspecified in the diagnosis**, ask the accredited private body/professional for their accreditation code/number. Pursuant to the “Specific Learning Disorder Guidelines” annexed to Ministerial Decree 30 July 2011, prot. no. 5669, applicants with SLD may be granted additional time amounting to no more than 30% of the total test time. Applicants with SLD may ask for additional time and/or...
customised support with their current medical certification, even when it has expired. Their new
documentation, updated for the new academic year, must be sent to
inclusione.studenti@unipd.it no later than 30 September 2025. Note that customised study
plans and SLD diagnoses issued before upper secondary school and/or by non-accredited
professionals will not be accepted under any circumstances.

- a valid ID document.

EU and non-EU citizens with a disability or an SLD who are not resident in Italy and intend to use
customised support must submit a legalised copy of their disability or SLD certificate, when required
by current international regulations. It must state their disability level and have been issued in their
country of residence. The certificate must be accompanied by a translation in Italian or English sworn
or certified by Italy’s diplomatic representations that the translation is a true copy of the original.
The Student Services Office – Inclusion department is responsible for assessing these certificates
to ensure that the foreign documentation attests to a disability or SLD recognised by Italian
legislation.
The support and/or aids requested can only be authorised after they have been assessed by the
Student Services Office – Inclusion department. The Student Services Office – Inclusion department
(inclusione.studenti@unipd.it) will email applicants notifying them of any support and/or aid provided
no later than the day before the test.
The following are not allowed under any circumstances: dictionaries, vocab lists formula books,
periodic tables, concept maps, smartphones, smart glasses, or the like.
When applicants have a particularly complex condition, we recommend that they apply for an
interview with dedicated personnel so that they can explain their needs. Apply to the Inclusion
department by completing the related online form at https://web.unipd.it/prenotazioniservizi/settore-
inclusione/
For further information, go to www.unipd.it/accoglienza-prove-ingresso

4. PUBLICATION OF MERIT LIST AND ENROLMENT

The merit list will be published at https://www.unipd.it/ammissioni-medicine-surgery from 25
September 2024. Successful applicants must accept their place by the deadline. Instructions on
how to do so will be published at the same time as the merit list.
Failure to enrol by the deadline means that applicants have rejected their place. Deadlines are
stated in the table below.
<table>
<thead>
<tr>
<th>Publication of merit list and reassignment of places</th>
<th>Deadlines for enrolling, switching course, and transferring from another university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merit list: on 25/09/2024 from 3:00 pm at <a href="https://www.unipd.it/ammissioni-medicine-surgery">https://www.unipd.it/ammissioni-medicine-surgery</a></td>
<td>from 3:00 pm on 26 September 2024 to 12:00 pm on 2 October 2024</td>
</tr>
<tr>
<td>Places reassigned 1*: 7 October 2024 in applicant's Uniweb profile</td>
<td>from 3:00 pm on 07 October 2024 to 12:00 pm on 11 October 2024</td>
</tr>
<tr>
<td>Places reassigned 2*: 15 October 2024 in applicant's Uniweb profile</td>
<td>from 3:00 pm on 15 October 2024 to 12:00 pm on 21 October 2024</td>
</tr>
</tbody>
</table>

*Places can only be reassigned when there are places available.

Should vacant places arise after the deadline because successful applicants have rejected their place, the Student Careers Office - Matriculation and Admissions Tests department will call the next applicant on the merit list directly.

5. STUDENTS WITH A FOREIGN QUALIFICATION

Students with a foreign qualification are admitted after passing an admissions test and submitting the necessary documentation, as set out by Italy's Ministry of University and Research (MUR). Go to [www.mur.gov.it/it](http://www.mur.gov.it/it) - Universities - Foreign Students.

For further information, please contact the Admissions and Welcome Department of the Global Engagement Office, email international.admission@unipd.it.

5.1 Enrolment process for EU and non-EU citizens resident in Italy

Citizens from Norway, Iceland, Liechtenstein, Switzerland and the Republic of San Marino are treated as EU citizens. Non-EU citizens resident in Italy will be admitted to the test once their residence permit has been deemed valid.

Applicants for admission to Year 2 onwards of this degree course in Medicine and Surgery must:
1. have submitted an application to have their prior learning recognised (point 2);
2. pre-enrol in Uniweb at [https://www.uniweb.unipd.it/](https://www.uniweb.unipd.it/) as per the procedures and deadlines in this call for admission (point 3);
3. sit an admissions test as per the procedures and deadlines in this call for admission (point 3);

Successful applicants wishing to enrol must:
1. submit their enrolment application and pay the first instalment as per the procedures and deadlines in this call for admission (point 4);
2. submit the documentation needed to assess their qualifications, as per the procedures and deadlines stated by the Admission and Welcome Sector of the Global Engagement Office (international.admission@unipd.it). See [https://www.unipd.it/en/how-apply](https://www.unipd.it/en/how-apply) for the required documentation;
3. submit the original documentation required [https://www.unipd.it/en/how-apply](https://www.unipd.it/en/how-apply) upon arrival in Italy, as per the procedures and the deadlines stated by the Admission and Welcome Sector of the Global Engagement Office (international.admission@unipd.it).

Applicants are exempt from the Italian language test pursuant to Legislative Decree no. 286/98 Art. 39 paragraph 5 and subsequent amendments and additions.

The enrolment procedure cannot be completed if applicants do not submit their documentation, it is incomplete, or their qualifications are unsuitable.

__5.2 Enrolment process for non-EU citizens residing abroad.__

Non-EU citizens residing abroad who wish to apply for admission to Year 2 onwards of this degree course in **Medicine and Surgery** must:

1. **pre-enrol** on the Universitaly portal at portal [www.universitaly.it/index.php/dashboard](http://www.universitaly.it/index.php/dashboard), stating the University of Padova and their chosen degree course. Pre-enrolment is required so that they can apply for a student visa at the Italian diplomatic representation in their country of residence;

2. have submitted an application to have their prior learning recognised (point 2);

3. **pre-enrol** on the Uniweb portal [www.uniweb.unipd.it/portal](http://www.uniweb.unipd.it/portal) as per the procedures and deadlines in this call for admission (point 3);

4. sit an **admissions test** as per the procedures and deadlines in this call for admission (point 3);

5. demonstrate that they have a **B2 level knowledge of the Italian language** by 30 September 2024 as per the instructions at [https://www.unipd.it/en/how-apply](https://www.unipd.it/en/how-apply)

Successful applicants wishing to enrol must:

1. submit their enrolment application and pay the first instalment as per the procedures and deadlines in this call for admission (point 4);

2. submit the documentation needed to assess their qualifications, as per the procedures and deadlines stated by the Admission and Welcome Sector of the Global Engagement Office ([international.admission@unipd.it](mailto:international.admission@unipd.it)). See [https://www.unipd.it/en/how-apply](https://www.unipd.it/en/how-apply) for the required documentation;

3. submit the original documentation required [https://www.unipd.it/en/how-apply](https://www.unipd.it/en/how-apply) upon arrival in Italy, as per the procedures and the deadlines stated by the Admission and Welcome Sector of the Global Engagement Office ([international.admission@unipd.it](mailto:international.admission@unipd.it)).

The enrolment procedure cannot be completed if applicants do not submit their documentation, it is incomplete, or their qualifications are unsuitable.
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 norms on administrative procedures and right to access administrative documents) and subsequent amendments, Maria Chiara Ferraresi, Head of the Student Career Office, is appointed to oversee the administrative procedure.

2) Person in charge of the Procedure to access the records: The Head of the Student Career Office, Maria Chiara Ferraresi. Candidates may exercise their right to access the competition records following the procedures set forth by Presidential Decree no. 184 of 12th April 2006.

3) Same-time enrolment: information on same-time enrolment can be viewed at [www.unipd.it/avvisi-ammissione-corsi](http://www.unipd.it/avvisi-ammissione-corsi).

4) Regulations in place on statements: should false or mendacious statements by the applicant emerge, it being understood that sanctions are provided for by the criminal code and special laws in place (Art. 75 and 76 of Presidential Decree 445/2000), the applicant will be unenrolled automatically. The University will seek to be refunded for any benefits (e.g. scholarships) given to the candidate and will not reimburse any of the university fees paid by the candidate. The mendacious statement will also entail compensation for damages by the parties involved.

5) Personal data gathered for the purposes of this call for admission are processed in compliance with EU Regulation no. 679 of 27.04.2016 (General Data Protection Regulation, GDPR) and the information available at [www.unipd.it/informativa-studenti](http://www.unipd.it/informativa-studenti).

Further general information on admissions regulations is available at [www.unipd.it/admission-alerts-courses](http://www.unipd.it/admission-alerts-courses).

Any amendments or additions to the content of this call for admission will be:
- published on the Official University Register;
- published on the University of Padova website at [www.unipd.it/avvisi-ammissione-corsi](http://www.unipd.it/avvisi-ammissione-corsi)

Current regulations apply to any issues not expressly addressed in this call for admission.

Padua, 31/07/2024

Rector of the University of Padova
Professor Daniela Mapelli

*Digitally signed pursuant to legislative decree 82/2005.*
ALLEGATO 1

Test programme to verify the acquisition of knowledge and skills for admission to the 3rd Year (60 questions on the topics listed in the Table Section 3)

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.
- Bacterial toxins.
- 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

Parasitology:
Intestinal and urogenital protozoa. Blood and tissue protozoa.

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
- 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: course, 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.
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
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

**THE BODY FLUIDS AND KIDNEYS**

The Body Fluid Compartments: Extracellular and Intracellular Fluids; Edema. 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**


**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


Nervous System

2. Cells of the nervous system: neurons, oligodendrocytes, Schwann cells, astrocytes, microglia; organization of the neurons of the central and peripheral nervous system: single neurons, nuclei and layers; electrical synapses; chemical synapses; neurotransmitters; introduction to chemical neuroanatomy; wiring and non-wiring forms of synaptic communication.
3. The ventricular system and the liquoral system.
4. The meninges: the dura mater, the arachnoid and the pia mater.
5. Macroscopic anatomy of the spinal cord.
6. Functional anatomy of the spinal cord; nuclei of the gray matter; organization of sensory and motor pathways:
   a. Spino-thalamic pathways.
   b. Spino-cerebellar pathways.
   c. Posterior column pathways.
   d. Pyramidal pathway.
   e. Extrapyramidal pathways.
   f. Esopyramidal pathways.
7. The brainstem: macroscopic anatomy of the medulla oblongata, pons and mesencephalon; the floor of the fourth ventricle.
11. The diencephalon: macroscopic anatomy of the thalamus, subthalamus, hypothalamus.
12. The telencephalon: macroscopic anatomy of the telencephalon; fissures, scissures, sulci and gyri of the cerebral hemispheres; microscopic anatomy of the cerebral cortex: allocortex and neocortex.
14. functional anatomy of the telencephalon and of the limbic system.
15. anatomical foundations of neurological and neuropsychological disorders.

List of topics covered during the course:

1) An introduction to neurophysiology: neurotransmitters, receptors, synapses
2) An introduction to neurophysiology: techniques for the study of brain function
3) Information processing in the nervous system
4) General properties of sensory systems
5) Mechanisms of sensory transduction
6) The somatosensory system
7) Pain
8) Pain and placebo
9) Retina
10) Retinal projections
11) Thalamus and visual cortex
12) The auditory system
13) Olfaction
14) Taste
15) Spinal cord circuitry and basic reflexes
16) The vestibular system
17) Eye movements
18) The motor cortex
19) Basal ganglia and the control of movement
20) The cerebellum
21) Hypothalamus and autonomic nervous system
22) Sleep and EEG
23) Mechanisms of memory formation
24) The two cerebral hemispheres
25) Critical periods during neural development
26) Neuronal plasticity
Test programme to verify the acquisition of knowledge and skills for admission to the 4th Year (60 questions on the topics listed in the Table Section 3)

**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; sexually-transmitted infections; infections of skin, bones and soft tissues.
- 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
- Non-invasive prenatal diagnosis (screening tests and cffDNA analysis): Definition and Classification. Circulating free fetal DNA and its applications
- Population screenings (pre and postnatal).

**Pathology/Mechanism of Diseases I and II**

**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
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.
New therapeutic strategies of the inflammatory process.

ONCOLOGY

Cancer as a multi-factorial and multi-step disease.
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

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
Abdomen
Musculoskeletal 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

Therapeutics 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.

PHARMACOLOGY
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.
Test programme to verify the acquisition of knowledge and skills for admission to the 5th Year (60 questions on the topics listed in the Table Section 3)

**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, myeloproliferative diseases, paroxystic nocturnal hemoglobinuria, myelodysplastic syndromes). Acute leukemias and myelodysplastic syndromes.
Chronic leukemias and myeloproliferative neoplasms
Differential diagnosis of lymphadenopathies
Lymphoproliferative 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 Haemorrhagic and Thrombotic disorders**
Disease of the coagulation and thrombosis: prof. Luca Spiezia will carry out 20 hours of frontal lessons aimed at studying the themes of thrombotic and hemorrhagic diseases. In particular, in the context of venous thromboembolism the following themes will be taken into consideration: acquired and congenital risk factors, clinical manifestations, the diagnostic process and the main therapeutic approaches. As part of the haemorrhagic conditions, acquired and congenital haemorrhagic diseases will be illustrated; will be considered also those coagulation tests which allow to identify the main bleeding disorders. Finally, the principles of therapy of hemorrhagic diseases will be treated. Some hours of the course will also be dedicated to consider those clinical-laboratory conditions named "complex coagulopathies" that are characterized by the coexistence of a thrombotic and haemorrhagic phenotype.

**Clinical Pharmacology**
Anti-inflammatory drugs: NSAID and corticosteroids
Adrenergic and cholinergic drugs.
Cardiovascular pharmacology: drugs to treat hypertension, hear failure, and angina.
CNS drugs: antidepressant, anxiolytics, antipsychotics, antiepileptic and antiparkinson drugs.
Drugs for the treatment of peptic ulcer disease, asthma, and thyroid 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; 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 Neurosurgery** |
| **Infections & 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 psychotherapeutic treatments of the main psychiatric diseases:
- Delirium and Dementia;
- Alcohol and substance abuse/dependence 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**
- To be familiar with hepatogastroenterological, infectious and endocrinological problems and to transfer them into clinical practice.
- Diagnostic and follow-up process and interpretation of clinical signs, biohumoral, microbiological and instrumental endoscopic, radiological and anatomopathological examinations.
- Evaluate the surgical indications in the pathologies examined.

**Heart and Lung Diseases**
- Know the fundamental pathophysiological mechanisms and recognize the main clinical, anatomo-pathological and diagnostic features of congenital and acquired heart disease, arterial and venous peripheral vascular diseases, acute and chronic respiratory failure, and inflammatory, infectious and neoplastic lung diseases.
- Know the correct use of the diagnostic techniques needed to establish the indications for medical treatment or interventional or surgical therapy.

- Know the main types of surgery in the pathologies described above and the related problems.

- Know the following pathologies:
  Chronic Obstructive Pulmonary disease;
  Asthma;
  Interstitial lung disease;
  Pleural diseases;
  Lung cancer;
  Lung function tests, blood gas analysis and respiratory failure;
  Tuberculosis;
  Pneumonia.

Test programme to verify the acquisition of knowledge and skills for admission to the 6th Year (60 questions on the topics listed in the Table Section 3)

General Surgery

1) Introduction to surgery (surgical risk, complications)
2) Shock (classification, management principles)
3) Infections of surgical interest
4) Benign and malignant diseases of the esophagus (including principles of surgical therapy)
5) Benign and malignant diseases of the stomach (including principles of surgical therapy)
6) Benign and malignant diseases of the small intestine (including principles of surgical therapy)
7) Benign and malignant colorectal diseases (including principles of surgical therapy)
8) Proctology (including principles of surgical therapy)
9) Benign and malignant diseases of the liver and biliary tract (including principles of surgical therapy)
10) Benign and malignant diseases of the pancreas (including principles of surgical therapy)
11) Hernias of the abdominal wall and incisional hernia (including principles of surgical therapy)
12) Diseases of the diaphragm (including principles of surgical therapy)
13) Skin cancers (including principles of surgical therapy)
14) Benign and malignant breast diseases (including principles of surgical therapy)
15) Soft tissue tumors (including principles of surgical therapy)
16) Tumors of the peritoneum (including principles of surgical therapy)
17) Endocrine surgery (including principles of surgical therapy)
18) Diseases of the mediastinum (including principles of surgical therapy)
19) Lung tumors (including principles of surgical therapy)
20) Acute abdomen (general framework, etiology, management principles)
21) Diseases of the spleen (benign and malignant)
22) Traumatology (general framework, management principles)
23) Transplantation (principles)
24) Bariatric surgery (principles)
25) Vascular surgery (principles)
26) Critical care medicine (principles)
27) Plastic and reconstructive surgery (principles)

**Mother and Child**

Obstetrics and Gynecology
The course will focus on the following topics:
- GAMETOGENESIS
- FERTILIZATION - PLACENTATION
- PLACENTARY FUNCTIONS
- OVULATION AND MENSTRUAL CYCLE
- MATERNAL CHANGES IN PREGNANCY
- OBSTETRIC ULTRASOUND
- PREGNANCY MONITORING
- PATHOLOGIES I TRIMETER OF PREGNANCY
- INVASIVE AND NON-INVASIVE PRENATAL DIAGNOSIS
- INTRAUTERINE GROWTH DELAYS
- GESTATIONAL DIABETES
- HYPERTENSIVE SYNDROMES IN PREGNANCY
- CHILDBIRTH
- OPERATING PARTS
- DYSTOCIAS AND ABNORMAL PRESENTATIONS
- MONITORING OF LABOR OF DELIVERY
- CARDIOTOCOGRAPHY - PARTOGRAM
- PREMATURE DELIVERY and P-PROM
- PLACENTA PRAEVIA - PLACENTA DETACHMENT - RUPTURE OF UTERUS
- INDOUTERINE DEATH
- LONG PREGNANCY
- MULTIPLE PREGNANCY
- FETAL WELL-BEING EVALUATION
- PUEPERIUM AND LACTATION
- PID - ENDOMETRIOSIS
- VAGINAL uterus prolapse
- FAMILY PLANNING
- DIAGNOSTIC AND OPERATIVE HYSTEROSCOPY
- LAPAROSCOPIC TECHNIQUES
- AMENORRHEA
- HYPERANDROGENISMS - POLYCYSTIC OVARY
- MENOPAUSE
- COUPLE STERILITY
- MEDICALLY ASSISTED REPRODUCTION
- ASSISTED REPRODUCTION TECHNIQUES
- PRE-NEOPLASTIC LESIONS OF THE GENITAL SYSTEM
- GYNAECOLOGIC ONCOLOGY
- SURGICAL TECHNIQUES

**Child Health**
1. Introduction to Pediatrics
   a. Differences between adults and children; specific child's health needs
   b. Clinical approach to children and their families
   c. Global Pediatrics; overview of the epidemiology of childhood diseases; neonatal, infantile and childhood mortality
   d. Healthy lifestyles in childhood (physical exercise, screen time, well being)
1. Growth and somatic development
   a. The characteristics of physical development from neonatal life to adolescence
   b. Use of growth charts (weight, height, head circumference)
   c. Growth abnormalities (short stature, weight loss, obesity)
   d. Pubertal development and its abnormalities (early puberty, pubertal delay)

2. Neonatology
   a. Term and pre-term newborn: definitions based on weight and gestational age
   b. Neonatal cardio-respiratory adaptation, Apgar score
   c. Neonatal screenings
   d. Neonatal asphyxia
   e. Respiratory distress syndrome
   f. Early and late neonatal sepsis
   g. Hypoglycemia and metabolic adaptation of the newborn
   h. Neonatal jaundice
   i. Sudden and Unexpected Postnatal Collapse

3. The first year of life
   a. Breastfeeding/Weaning
   b. Brief Resolved Unexplained Event
   c. Vaccinations and immunization schedule

4. Gastrointestinal pathology
   a. Chronic diarrhoea
   b. Approach to the child with hypertransaminasemia
   c. The child with cholestasis
   d. Celiac disease
   e. Chronic inflammatory diseases

5. Nephro-urological pathology
   a. Urinary tract infections, urinary tract malformations, enuresis
   b. Approach to the child with hematuria and proteinuria; acute glomerulonephritis; nephrosis
   c. Acute and chronic renal failure
   d. Hereditary renal diseases

6. Respiratory diseases
   a. Epidemiology of respiratory tract diseases
   b. Upper respiratory tract infections (otitis, sinusitis, pharyngotonsillitis, croup)
   c. Lower respiratory tract infections (bronchiolitis; wheezing, asthma, pneumonia)

7. Allergies
   a. Overview, epidemiology and natural history
   b. Food and inhalant allergies
   c. Atopic dermatitis

8. Heart diseases
   a. Congenital heart diseases: epidemiology, diagnosis, medical and surgical treatment principles and prognosis
   b. Acute heart diseases: myocarditis, endocarditis, pericarditis
   c. Most common arrhythmias of childhood
   d. Heart failure
   e. Heart murmurs in children

9. Immune system diseases
   a. Development of the immune system
   b. Most common congenital and acquired immunodeficiencies

10. Hemato-oncological pathology
a. Most common congenital and acquired anemias and platelet disorders
b. Childhood and adolescent cancers (epidemiology; leukemias and lymphomas)

**Muscle and Bones**

**MUSCULOSKELETAL DISEASES**
Orthopedic terminology. Principles of diagnosis and treatment of diseases of the musculoskeletal system
• Principles of anatomy and physiology of the musculoskeletal system
• Traumatic injuries: principles of classification, diagnosis, treatment, complications
• Specific fractures and their treatment
• Brachial plexus injuries. Canalicular syndromes
• Pathologies of the spine
• Pathology of the hip
• Pathology of the knee
• Shoulder pathology
• Foot pathologies
• Osteoarthritis: general concepts and principles of treatment
• Infectious pathologies of bones and joints
• Inflammatory diseases of the bones and joints
• Dysmetabolic bone pathologies
• Prosthetic surgery
• Bone and soft tissue tumors: classification, diagnosis, treatment principles
• Benign, uncertain and malignant primary bone tumors
• Benign, uncertain and malignant primary soft tissue tumors
• Principles of classification, diagnosis, and treatment of bone metastases

**APPLIED DIETETIC TECHNICAL SCIENCES**
The course 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.
- 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.
- Sarcopenia/frailty and nutritional requirements

**PHYSICAL MEDICINE AND REHABILITATION**
Motor and functional disability: general concepts of assessment and rehabilitation management; Phases of the rehabilitation process. The project and the rehabilitation program. The rehabilitation setting - The levels of assistance in rehabilitation; The rehabilitation team. Rehabilitation aids, orthoses and prostheses; joint ergonomics. The physical energies used. Kinesitherapy. Rehabilitative management in the patient with oncological pathology and in particular with lymphedema.
Rehabilitative care in patients with musculoskeletal pathologies: back pain, fractures, prosthetic surgery, vertebral scoliosis and thoracic hyperkyphosis, osteoarthritis, shoulder and knee pathologies.
Rehabilitation pathways for the main rheumatic pathologies
Taking charge of the patient with pathology in the geriatric field.
Rehabilitative bases in cardiopulmonary pathologies.
Rehabilitation pathways in subjects with bone-muscle-tendon trauma.
The role of musculoskeletal ultrasound and interventional aspects.
The role of neurophysiological techniques.
Rehabilitative care in patients with central and peripheral neurological pathology
New technologies
Oropharyngeal dysphagia: general concepts of rehabilitation.

INTERNAL MEDICINE
This course is designed to provide students with an understanding of and the ability to perform non-invasive analysis of cardiopulmonary adaptations during physical exercise. Furthermore, skills in test interpretation will be addressed for a comprehensive diagnostic and functional evaluation, which will allow students to provide an adapted exercise training prescription for their future patients. Finally, it is aimed to improve transversal competencies in professional communication, problem solving and team working.

Public Health
Health and health determinants: relationships between health and biological, physical, psychological and social aspects.
Use of indicators and measures of disease occurrence in epidemiology; basic biostatistical tools and data sources; types of epidemiological studies commonly used; causation.
Epidemiology of communicable and non-communicable diseases; basic clinical epidemiology.
Principles of health policy and planning; disease prevention, health promotion and health education; intervention methods; population screening strategies.
Health systems and health care provision; quality and safety of health care; healthcare-associated infections (HAIs).
Principles of environment and health, maternal and child health, mental health, disability and health of the elderly.
Fundamentals of global health and global health actors.
A brief history of public health. Critical reading.

Preliminary medical-legal notions.
Damage to the person and causality.
Judges and administration of the Justice - The Public Attorney and the Judge – Expert opinion.
Legal Medicine Methodology.
Legal Medicine and criminal law - Crimes of interest for this course (sexual violence, illegal interruption of pregnancy, family abuse, personal injuries, homicide).
Duties of the health professional.
Forensic Medicine and eligibility (to drive, to carry a firearm, for transplants)
Forensic medicine in the emergency setting.
Clinical Risk Management and Professional Liability
Introduction to criminology - Sociological, psychological and biological theories of crime.
Forensic Medicine and capacity.

Occupational Medicine: definitions, historical perspective, field of application.
Organization of prevention in the workplace: organizational and management tools.
Risk assessment: definition of hazard and risk, principles of risk assessment, quantification of hazards and methodology of risk assessment; safety limits for the working and living environment; biological monitoring.

Occupational diseases: diseases of the respiratory system, neoplasms, dermopathies, musculoskeletal diseases, noise and vibration diseases, metal diseases, solvents and pesticides.

Occupational risks and occupational diseases in the health sector: chemical, physical and biological agents; sensitizers and carcinogens; ergonomic and organizational risks.

Legislation: general principles and regulatory framework; management of accidents and occupational diseases.

Health management:
- Concept of health, determinants of health, health field
- Concept of economics and health economics
- Health care schemes and health care systems (Italian and international ones)
- Health needs, need-demand-supply, health outcomes
- Principles of healthcare management
- Efficiency, effectiveness, appropriateness, equity and participation
- Financing methods, allocation of resources, costs and reimbursement methods for outpatient and inpatients services
- Minimum basket
- Budget and performance system
- Economic analysis
- Healthcare pathways