Anatomy [12041C3]

Offerta didattica a.a. 2024/2025

Docenti: GIORGIO VIVACQUA

Periodo: Secondo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	6	BIO/16

Stampa del 06/05/2025

Anatomy [1204216]

Offerta didattica a.a. 2024/2025

Docenti: GIORGIO VIVACQUA

Periodo: Ciclo Annuale Unico

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	11	BIO/16, BIO/16

Stampa del 06/05/2025

Biochemistry [1204213]

Offerta didattica a.a. 2024/2025

Docenti: ALESSANDRO LEUTI

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
The teaching aims at deepening the knowledge of the metabolic pathways, and their regulation, that orchestrate the biosynthesis and the breakdown of the main organic molecules involved in the biochemical processes in human cells, as well as to apply these concepts to tissue biochemistry and human pathologies.

Prerequisiti
The student must have passed the Biochemistry 1 exam.

Contenuti del corso
• Krebs Cycle: the role of pyruvate dehydrogenase, reactions and regulation of Krebs cycle.

• Lipid metabolism: lipoproteins;lipogenesis and lipolysis; beta-oxidation of odd- and even-chain, saturated and unsaturated fatty acids; ketogenesis; biosynthesis of fatty acids, phospholipids and cholesterol; regulation of lipid metabolism.

• Ammino acid metabolism: transamination; oxidative deamination; urea cycle; catabolism of ammino acids;
• Nucleotide metabolism.
• Heme synthesis and catabolism.
• Steroid Hormon biosynthesis
• Water- and fat-soluble vitamins: vitamin B complex and ascorbate, vitamin A, D, E, K; pathologies caused hypovitaminosis.
• Oxidative phosphorylation: chemiosmotic theory; mixed and pure electron transporters; redox loop and proton pump; mitochondrial complexes and ATP-Synthase.
• Examples of metabolic and enzyme-related diseases.
• Biochemistry of human organs: brain and immune system

Metodi didattici
Ex-cathedra lectures, reading and interpretation of scientific literature, weekly student counselling.

Modalità di verifica dell'apprendimento
Written test on the topics covered during the lectures. Non-mandatory interview for students willing to improve the written test mark.

90 minutes written test, 10 short essays (8 Biochemistry, 2 Clinical Biochemistry, 350 max words each). Each short essay will be worth 0-30 points and the final grade will be the average of all the essays.

Testi di riferimento
• Lehninger Principles of Biochemistry (D.L. Nelson and M.M. Cox) (main text)
• Voet’s Principles of Biochemistry (facultative)

The teacher will provide all the slides used in the lectures, as well as learning objectives of each topic covered in class.

Scientific papers

Altre informazioni
Knowledge and understanding
At the end of the course, the student must be able to describe the structure and general functions of the main organic molecules in human biology, as well as to describe the main pathways that orchestrate the metabolism of

carbohydrates, lipids, proteins and nucleic acids, as well as the main elements of clinical biochemistry to which these elements are applied.

Applying knowledge and understanding
At the end of the Course, the student must be able to act to understand the main roles of organic molecules involved in cellular processes, and should be able to describe the connections between different metabolic pathways as they are constantly modulated during cellular homeostasis. He/she/they should be able to apply these concepts to the human pathologies that will be covered during the lectures.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	7	BIO/10

Stampa del 06/05/2025

Biochemistry [12041C4]

Offerta didattica a.a. 2024/2025

Docenti: ALESSANDRO LEUTI

Periodo: Secondo Ciclo Semestrale

Obiettivi formativi
The teaching aims at providing the essential knowledge to understand the chemistry behind the main cellular and physiological processes, and the role played by the main organic molecules in these functions. The student will study the structure and function of carbohydrates, lipids, proteins and nucleic acids, and will be introduced to the concept of metabolism and of its regulation in healthy and pathological conditions, while learning the thermodynamics that governs the metabolic fluxes. The course will also feature an application of these concepts to clinical biochemistry, to better understand how these processes are involved in the diagnostic process.

Prerequisiti
A basic knowledge of the cell structure (organelles and compartmentalization) and functions. A basic knowledge of inorganic chemistry concepts such as pH, pKa, solubility, buffer solutions, equilibria, as well as basic concepts of organic chemistry , such as functional groups and species, IUPAC nomenclature and the main reactions of organic molecules.

Contenuti del corso
• Water: water structure and properties; hydrogen bonds and other electrostatic interactions; interaction between water and other organic compounds. Colligative properties.
• Amino acids and proteins: structure and function of amino acids. Classification and chemical-physical properties.
• Three-dimensional structure of proteins: primary, secondary, tertiary and quaternary structure of proteins; Ramachandran plot; protein folding.
• Protein Function: collagen, keratin and oxygen-transporting molecules: structure of hemoglobin and myoglobin, saturation, Bohr Effect, homotropic and heterotropic allosteric modulators of hemoglobin.
• Thermodynamics: concept of entropy, enthalpy and Gibbs free energy. - Enzymes: structure and properties of enzymes; catalysis; Michaelis-Menten kinetics; V0, Vmax and Km. Lineweaver-Burk plot. Reversible and irreversible inhibition
• Structure and role of carbohydrates: monosaccharides; oligosaccharides; polysaccharides; O- and N-glycosidic bond; starch; cellulose; glycogen.
• Nucleotides and nucleic acids: structure and functions; DNA and RNA.
• Structure and function of lipids: fatty acids; phospholipids; cholesterol; Eicosanoids and PUFA-derived endogenous signalling lipids.
• Biological membranes and transport.
• Biosignalling:
• Carbohydrate metabolism and its regulation: glycolysis; gluconeogenesis; pentose phosphate pathway; regulation of carbohydrate metabolism; glycogenesis; glycogen breakdown.
• Structural Biology

Metodi didattici
Ex-cathedra lectures, reading and interpretation of scientific literature, weekly student counselling.

Modalità di verifica dell'apprendimento
Written test on the topics covered during the lectures. Non-mandatory interview for students willing to improve the written test mark.

90 minutes written test, 10 short essays (8 Biochemistry, 2 Clinical Biochemistry, 350 max words each). Each short essay will be worth 0-30 points and the final grade will be the average of all the essays.

Testi di riferimento
• Lehninger Principles of Biochemistry (D.L. Nelson and M.M. Cox) (main text)
• Voet’s Principles of Biochemistry (facultative)

The teacher will provide all the slides used in the lectures, as well as learning objectives of each topic covered in class.

Scientific papers

Altre informazioni

Knowledge and understanding
At the end of the course, the student must be able to describe the structure and general functions of the main organic molecules in human biology, as well as to describe the main pathways that orchestrate the metabolism of carbohydrates, lipids, proteins and nucleic acids, as well as the main elements of clinical biochemistry to which these elements are applied.

Applying knowledge and understanding
At the end of the Course, the student must be able to act to understand the main roles of organic molecules involved in cellular processes, and should be able to describe the connections between different metabolic pathways as they are constantly modulated during cellular homeostasis. He/she/they should be able to apply these concepts to the human pathologies that will be covered during the lectures.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	6	BIO/10

Stampa del 06/05/2025

CARDIOVASCULAR EMERGENCY [1204503]

Offerta didattica a.a. 2024/2025

Docenti: NUNZIO MONTELIONE

Periodo: Secondo Ciclo Semestrale

Obiettivi formativi
The aim of the integrated course is to provide the student with the basis for an integrated knowledge of Cardiovascular and Medical pathologies and of anaesthetic and resuscitation techniques in an emergency setting, starting from genetic and non-genetic risk factors, from clinical presentation and diagnostic procedures, up to the therapeutic available strategies (pharmacological, surgical and endovascular, as well as resuscitation techniques and general and loco-regional anaesthesia) and the predictive and prognostic factors of the efficacy of the treatments, as well as the management of the patient in emergency-urgency setting. To provide the basis for understanding the methods and principles of therapy to be implemented in the specific pathologies of critically ill patients in emergency medicine. To make known the causes of alteration of the vital parameters of the most important organs and systems, making the correlation between physiology, pathology and diagnostic-therapeutic intervention in emergency and urgency. Provide the basis for understanding the principles of anaesthesiology. In particular, the course aims to provide students with an integrated and multidisciplinary vision in the approach to the Cardiovascular patient and the critically ill patient.

Prerequisiti
According to the Regulations of the Degree Program, no prerequisites are envisaged.

Contenuti del corso
Programme
The program will be divided into lectures (on specific topics of Cardiovascular Surgery, Cardiological Emergencies, Intensive and Resuscitative Therapy) and innovative teaching: flipped classroom, Lecturio, JoVe.

The lessons will also be enriched by the presentation of clinical cases and during these lessons anonymous learning tests will be performed through real-time questionnaires carried out in the classroom (Mentimeter)

For each lesson the following aspects will be addressed:
1. Risk factors predisposing to cardiovascular and respiratory diseases
2. Clinical presentation of cardiovascular diseases and states of emergency also required resuscitative therapy
3. Main diagnostic procedures in urgent setting
4. How to interpret the radiological, biochemical investigations and electrophysiological and blood gas analytical findings specific for each pathology
5. Main predictive and prognostic factors of Cardiovascular pathology
6. Principles of treatment and main guidelines for daily clinical practice
7. Principles of an integrated approach in Cardiovascular, Respiratory and Multiorgan failure
8. New frontiers in the treatment of Cardiovascular therapies: minimally invasive and biological therapy
9. Interpretation of clinical trials and principles of clinical trial designs

ANESTHESIOLOGY, RESUSCITATION AND PAIN THERAPY
EDUCATIONAL PROGRAM –

BLSD –
CPR Basics for Adults
Overview
Learning Objectives
Understanding the ABCDs of CPR
Chest Compressions
Overview
Learning Objectives
The Importance of Compressions
Chest Compression Technique
Chest Recoil
Compression Rate
Opening the Airway and Giving Breaths

Overview
Learning Objectives
Rescuer Position
Performing the Head Tilt-Chin Lift
Mouth-to-Mouth Breathing
Mouth-to-Barrier Device Breathing
Mouth-to-Pocket Mask
Ambu device
Compression-Ventilation Ratio
Rescuer Adult CPR Sequence
Overview
Learning Objectives
Putting It All Together
Positioning the Victim
Step 1: Assessment
Step 2: Activate Emergency Response System and Get an AED
Step 3: Open Airway and Check Breathing
Step 4: Give 2 Breaths
Step 5: Pulse Check
Locating the Carotid Artery Pulse
Step 6: Begin Cycles of 30 Chest Compressions and 2 Breaths
Review Questions
1-Rescuer Adult CPR Practice Sheet
AED and the Use in Special Situations
CPR for Children (1 Year of Age to Puberty)
Automated External Defibrillator
CPR for Infants
Relief of Choking

ACLS
Respiratory Arrest Case
Management of Respiratory Arrest
Arrest Algorithm

VF/Pulseless VT Case
Managing VF/Pulseless VT: The Cardiac Arrest Algorithm
Application of the Cardiac Arrest Algorithm: FV/TV Pathway

Routes of Access for Drugs
Vasopressors
Antiarrhythmic Agents

Pulseless Electrical Activity Case
Description of PEA
Managing PEA: The Cardiac Arrest Algorithm
Managing PEA: Diagnosing and Treating Underlying Causes
Asystole Case
Approach to systole
Managing Asystole
I and T causes
Immediate Post-Cardiac Arrest Care
Application of the Immediate Post-Cardiac Arrest Care Algorithm
+ RECAP
Clinical cases

EMERGENCY CARDIOLOGY
Emergency Medicine Approach to the Patient with Chest Pain
Acute coronary syndromes
Acute myocardial infarction with ST segment elevation and Mechanical Complications of Heart Attack
Acute myocardial infarction with no-ST segment elevation
Myocarditis, Pericarditis, Pericardial Effusion and cardiac tamponade
Arterial hypertensive emergencies
Pulmonary Embolism
Endocarditis - Mitral and aortic valve diseases, including indications to surgical and percutaneous treatment
Arrhythmias and Sinus Disease: AV conduction disorders, indications to pacemaker, implantable cardioverter defibrillator and resynchronization therapy
Syncope
Acute pulmonary edema

Cardiogenic shock and intra-aortic balloon pump Cardiac arrest – Sudden death Mechanical ventricular assistance

Lessons' Calendar
1. Emergency Medicine Approach to the Patient with Chest Pain - Acute myocardial infarction with ST segment elevation and Mechanical Complications of Heart Attack
2. Acute myocardial infarction with no-ST segment elevation
3. Clinical cases
4. Myocarditis, Pericarditis, Pericardial Effusion and cardiac tamponade
5. Arterial hypertensive emergencies
6. Pulmonary Embolism
7. Endocarditis - Mitral and aortic valve diseases, including indications to surgical and percutaneous treatment
8. Arrhythmias and Sinus Disease: AV conduction disorders, indications to pacemaker, implantable cardioverter defibrillator and resynchronization therapy
9. Clinical Cases
10. Syncope
11. Acute pulmonary edema
12. Cardiogenic shock and intra-aortic balloon pump Cardiac arrest – Sudden death Mechanical ventricular assistance
13. Clinical Cases

VASCULAR SURGERY
Acute limb ischemia and chronic obstructive arteriopathies of the limbs (including diabetic arteriopathy and foot infection, Buerger's disease)
Acute and chronic cerebro-vascular insufficiency (including Subclavian Steal Syndrome)
Acute aortic syndrome and aortic dissections (Type A and B)
Aortic arch and thoraco-abdominal aortic aneurysm in urgent setting
Ruptured abdominal aortic aneurysm (rAAA) and Abdominal compartment syndrome (ACS)
Vascular trauma (including vascular access complication)
Blunt thoracic aortic injury (BTAI) and chest trauma
Acute and chronic celiac-mesenteric insufficiency
Venous thromboembolic disease and pulmonary embolism
Vascular Graft infection

Metodi didattici
The course contents will be delivered by integrating the different topics taught using lectures, problem-based and case-based learning, and interactive sessions with related instrumental documentation (ecg, echocardiogram, ultrasonography, CT-scan, airway control, fluid control, intensive care monitoring, Seldinger technique for a total of 62,5 hours). Afterward, clinical practice sessions will start in the Polyclinic, at the Cardiology Outpatient Clinics, and the Departments of Cardiology, Vascular Surgery and Anaesthesia and Resuscitation. Internship will last 5 CFU and will aim to provide the student with a general framework on cardiovascular medical and/or surgical and intensive care diseases and provide the practical skills covered by the clinical skills (see above). The internship involves a division into groups, students will be followed by appointed Tutors who will explain the clinical and instrumental manoeuvres and will follow the students during their execution. Students will be required to participate in discussions actively and join the multidisciplinary examination of clinical cases. Simulation sessions will be integral part of the course

Modalità di verifica dell'apprendimento
Practical test evaluation (clinical skills), written exam and optional oral exam.

The exam consists of a written and an optional oral test. The preparation acquired during the course will be assessed by administering a test, with equivalent questions based on the teaching modules. Within the test there will be questions of Cardiovascular pathophysiology and critical settings; there will be examples of clinical cases such as those shown in lessons or dealt with during internships, the ability of critical analysis by the learner will be tested beyond to the patient, developing the most appropriate diagnostic path. In the written test the student will have to demonstrate knowledge of the biological bases that lead to the development and progression of Cardiovascular pathology and states of emergency starting from the genetic, environmental, and pathophysiological bases up to the clinical evolution of symptoms and the fundamental notions of radiology, and the interactions between radiation and matter. Clinical cases will be included in the written test to assess the student's ability to coordinate the diagnostic-therapeutic process of the cardiovascular and trauma patient or in patient with respiratory failure. The oral exam consists of an oral interview based on the discussion of a clinical case through which the student will be able to demonstrate knowledge of the evolution of the disease and being able to identify the correct diagnostic path to be implemented and the different therapeutic strategies that concur to the management of the patient suffering from cardiovascular disease, trauma or in respiratory failure. To verify the knowledge and skills acquired, the teachers will also take into consideration the evaluation of the clinical tutors in the booklet of each student. During the oral exam, each student will be evaluated by 3 teachers / commissions with questions relating to the program.

Mark out of thirty for the written test. Optional oral exam (if student want to try to implement the grade obtained with the written test, but confirmation of the written test grade is not guaranteed).
The written test will consist of 60 multiple choice quizzes to be solved in 60 minutes.
The written test will be made of multiple-choice questions divided as follows: 25 emergency cardiology questions, 25 emergency cardiovascular surgery questions, and 10 anaesthesia and resuscitation questions.
The written test will be evaluated in thirties and will be passed by reaching a sufficient grade (18/30) in ALL subjects.
The mark of the written test is a mark weighed on the difficulty of the exam. In fact, since it is impossible, in the different exam sessions, to prepare questions of the same difficulty, to avoid the written tests being affected by these differences, a grade of 30/30 will be assigned to the task that obtained the best mark and all the others will undergo a correction proportionate to the correction made.
At the end of the session there will be the optional oral interview. If the student chooses to take the final interview, the grading of the written test may increase or decrease.

Testi di riferimento
Slides of the lessons uploaded to e-learning on the days before each lesson.
Lecturers will recommend original and review articles on specific and interesting topics during the course.

Suggested Textbooks
CARDIOLOGY:
- Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine. Authors: Braunwald - Mann - Libby - Bonow - Zipes – Tomaselli. Publisher: Elsevier, 11th Edition, 2018; ISBN: 9780323462990

VASCULAR SURGERY:
- Rutherford's Vascular Surgery and Endovascular Therapy, 2-Volume Set, 9th Ed., Elsevier (textbook). By Anton N Sidawy and Bruce A Perler. ISBN Number 9780323427913
- Vascular and Endovascular Surgery: A Comprehensive Review, 9th Ed., Elsevier (textbook). By Wesley S. Moore. ISBN Number 9780323480116
- Comprehensive Vascular and Endovascular Surgery - 2nd Ed., Mosby Ltd. (textbook). By John W. Hallett, Jr., Joseph L. Mills, Jonothan Earnshaw, Jim A. Reekers, and Thom Rooke. ISBN Number 9780323057264
- Master Techniques in Surgery: Cardiac Surgery by Frederick Grover and Michael J. Mack | 10 Mar 2016 Wolters Kluwer

ANESTHESIOLOGY, RESUSCITATION AND PAIN THERAPY:
2020 American Heart Association Guidelines for CPR and ECC
https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines

Altre informazioni
Cardiovascular emergency is an integrated course that includes the teaching of emergency cardiology, emergency cardiovascular surgery and anaesthesiology, resuscitation and pain therapy required in urgent setting. The course aims to address the themes of the individual subjects in a multidisciplinary manner, sharing different views in the approach to promptly diagnosis and therapy, both medical and surgical, to the pathologies under study.
Cardiovascular emergency course provides knowledge and experience through formal lectures and seminars, problem-based and case-based learning, and practical clinical sessions at the bedside or in the simulation centre

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	10	MED/11, MED/23, MED/41, MED/11, MED/23, MED/41

Stampa del 06/05/2025

CLINICAL MEDICINE (1) [1204303]

Offerta didattica a.a. 2024/2025

Docenti: FABIO MANGIACAPRA

Periodo: Primo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	21	MED/36, MED/36, MED/10, MED/22, ING-IND/34, BIO/14, MED/08, MED/11, MED/23, MED/06, MED/21, MED/10, MED/22, MED/11, MED/23, MED/21

Stampa del 06/05/2025

CLINICAL MEDICINE (2) [1204304]

Offerta didattica a.a. 2024/2025

Docenti: PAOLO POZZILLI, MARIA FRANCISCA NAVAJAS MARTINEZ

Periodo: Secondo Ciclo Semestrale

Obiettivi formativi

Classification, epidemiology and clinical picture of the most important endocrine metabolic diseases: diabetes mellitus, obesity and metabolic syndrome, thyroid disease and parathyroid, pituitary disorders, adrenal, the male and female gonads, growth disturbance and reproduction, neuroendocrine tumors of endocrine origin and hypertension.
To understand the physiopathology and to recognize signs and symptoms of immunological, allergic and rheumatic diseases.
- To collect a medical history, to perform a complete physical examination, to conduct blood tests and to decide diagnostic studies for the diagnosis and the follow-up of patients with immunological, allergic and rheumatic diseases.
- To know and interpret immunological, allergic and rheumatic laboratory tests and imaging.
- To know the basics of the treatment of immunological, allergic and rheumatic diseases.
- To know the importance of the psychological aspects of patients with immune-rheumatic diseases, particularly for the chronic and/or debilitating ones.
Know the main urological diseases and recognize epidemiological and etiological features. Be able to identify symptoms, diagnostic approach and surgical indications according to the most modern and minimally invasive treatments available.
The course aims to provide students with the ability to recognize the most common infectious diseases, focusing on symptoms , clinical signs, diagnostic tests and treatment.

Prerequisiti

The Integrated Medical and Surgical Systematic Pathology II exam requires that you have passed General Pathology and Pathophysiology and Clinical Pathophysiology, Semeiology and Laboratory Medicine.

The anatomy and embryology of the endocrine glands: pituitary, thyroid, parathyroid, adrenal cortex, medullo adrenal gland, testis, ovary, different classes of hormones (polypeptides, catecholamines, steroids, thyroid hormones) and their method of synthesis, secretion, transport, metabolism, the mechanism of action of the main hormones, the different types of hormone receptors, the mechanisms of signal transduction hormone, the influence of hormones on gene expression.
- Embryology, histology and anatomy of the organs of the immune system
- Physiological functions of cells of the immune system
- Physiological functions of cytokines and chemokines
- Physiology of the innate and adaptive immune system
- Immunological mechanisms of hypersensitivity
The anatomy and embryology of the urinary tract and male genitals ; Central and peripheral innervation of urinary tract and male genital apparatus ; physiology of kidneys and urinary tract ; neurological and hormonal regulation of the organs and the male genitalia ; knowledge acquired in the courses of general pathology , microbiology and immunology

Contenuti del corso

Epidemiology, genetics and immunology. Acute and chronic complications. Primary and secondary prevention. Obesity and insulin resistance.
Type2 diabetes. Notes of epidemiology and pathogenesis. Retinopathy. Nephropathy.
Neuropathy. Hypoglycemia. The hypercholesterolemia and hypertriglyceridemia. Clinical features and complications. Treatment of different types of hyperlipidemia. Diseases of the thyroid. Simple goiter. Hyper and hypothyroidism. Thyroiditis. Tumors of the thyroid. Diagnostic imaging: ultrasound and scintigraphy in thyroid disease. The thyroid fine-needle aspiration.
Pathophysiology hypothalamic-pituitary. Syndromes pituitary hyperfunction. Syndromes pituitary hypofunction. Neoplasms of the anterior pituitary. Prolactinomas, GH-secreting adenomas. Diabetes insipidus.
Pathophysiology and clinical adrenocortical. Adrenocortical Insufficiency. Syndromes, adrenal hyperfunction. Adrenocortical neoplasms.Diseases of the female reproductive system. Amenorrhea and abnormal menstrual cycle.

Hormone-secreting
ovarian tumors.
Diseases of the male reproductive: hypogonadism (primary and secondary and peripheral resistance to androgens) testicular tumors. Diagnosis and Treatment
Iperparatiroidismi and ipoparatiroidismi: Employee and nosological characteristics. clinical and diagnostic.
Osteoporosis. Poliendocrine multiple syndromes (MEN): classification and etiology, MEN type 1, type 2-A, 2-B type. Clinical.
Neuroendocrine tumors (NET). Pheochromocytoma .
- Immune-regulation: cell-mediated and humoral immunity; mechanisms of immune-regulation; classification of allergic and immunological diseases
- Dysregulation of the immune response: systemic autoimmune diseases: systemic lupus erythematosus, Sjogren's syndrome, inflammatory myositis, antiphospholipid syndrome, systemic sclerosis, rheumatoid arthritis, mixed connective tissue disease, undifferentiated connective tissue diseases; vasculitis: giant cell arteritis, Takayasu's arteritis, Kawasaki disease, polyarteritis nodosa, microscopic polyangiitis, granulomatosis with polyangiitis, eosinophilic granulomatosis with polyangiitis, cryoglobulinemia, Behçet's disease, secondary vasculitis; rheumatic polymyalgia; immunology and liver diseases: B and C hepatitis, autoimmune hepatitis, primary sclerosing cholangitis, primary biliary cirrhosis.
- Allergic diseases: respiratory allergies, other allergies.
- Therapy of immune-mediated diseases: DMARDs (immunomodulators, immunosuppressants), target therapy in immunology.
- Primary and secondary immunodeficiency syndromes.
Kidney cancer: notes of epidemiology and genetics.
Early detection. Traditional and mini-invasive treatments. Ischemia time and renal function.
Upper urinary tract tumors:diagnosis and therapeutic options
Bladder cancer: diagnosis and treatment of superficial and muscle invasive tumors.
Urinary diversions: continent, incontinent, orthotopic and heterotopic.
Prostate cancer: notes of epidemiology and genetics.
Early detection. Fusion biopsy. Surgery and radiotherapy. Metastatic disease.
Testicular cancer: diagnosis and multidisciplinary treatment.
Urolithiasis: diagnosis and treatment.
Benign prostatic hypertrophy: epidemiology, etiology, diagnosis and modern mini-invasive treatments.
Penile cancer: epidemiology, etiology, diagnosis and treatment.
Urethra diseases: diagnosis and treatment.Genitourinary trauma: diagnostic assessment, management and treatment.
Laparoscopy in Urology: fields of application and future.
Robotics in urology. Congenital urologic diseases.
Neurogenic bladder.
The course will consist of lectures that will focus on the epidemiology, etiology, clinical presentation, diagnosis and treatment of infectious diseases. Bedside teaching complete the course.

Metodi didattici

Endocrinology and Metabolism Module
Problem based learning, meetings, seminars, internal and external placements. Laboratory activities. Clinical activities. Attendance at interdisciplinary meetings. Practical training in the outpatient clinics and in the day clinic of the Endocrinology Unit; external training in institutions with whom contracts have been signed.

Modalità di verifica dell'apprendimento

The Integrated Systematic Medical and Surgical Pathology 2 (PSIMC2) examination consists of a single written test of 60 multiple-choice questions (12 questions per module, 0.5 marks for each correct answer), covering the five modules of Allergology and Clinical Immunology, Endocrinology and Metabolism, Nephrology, Urology and Infectious Diseases. The exam is passed with an overall mark of at least 18/30 and only if the student achieves a sufficiency (at least 6 out of 12 correct answers) in each module. If a student wishes to attempt to improve his or her score on the written paper, he or she may sit the oral examination, which covers all modules and may increase, decrease or confirm the score on the written paper, depending on the student's performance.

Testi di riferimento

• Romagnani, Malattie del Sistema Immunitario, McGraw-Hill.
• Valesini - Valentini - Montecucco - Cerinic - Ferraccioli - Cutolo - Bombardieri, UNIREUMA-REUMATOLOGIA, IDELSON GNOCCHI EDITORE (2008)

Bibliografia (reperibile per via informatica)
• PubMed (MedLine) http://www.ncbi.nih.gov/pubMed/
• Medical Matrix http://www.medmatrix.org/Index.asp
• American College of Rheumatology http://www.rheumatology.org/
• On-line Archives of Rheumatology http://www1.protec.it/rheumatology/archives.htm
• On-line Atlas of Dermatology and Rheumatology http://www1.protec.it/atlas/

• Paolo Pozzilli e collaboratori, L'Endocrinologia del Campus Bio-Medico, Minerva Medica, 2020
• Helen E. Turner, Jhon A.H.Wass, Oxford Handbook of Endocrinology and Diabetes, Oxford University Press, 2011
• Jhon A.H.Wass, Paul M. Stewart, Oxford Textbook of Endocrinology and Diabetes, Oxford University Press, 2011
• Anthony H. Barnett, Type 2 Diabetes, Oxford University Press, 2012
• Core curriculum. Endocrinologia e metabolismo, McGarw-Hill Education, 2014
• PubMed (MedLine): http://www.ncbi.nih.gov/pubMed/
• Endotext: www.endotext.org

• Francesco Porpiglia, Urologia, Minerva Medica, 2015
• Harrison's Principles of internal medicine 19th Edition, McGraw-Hill; 2015
• John Feehally, Jurgen Floege, Richard J. Johnson, Comprehensive Clinical Nephrology, Fifth edition, Saunders, 2014

• Brenner and Rector's The kidney, 10th Edition, Elsevier; 2015
• Heptinstall's Pathology of the Kidney, Wolters Kluver, Seventh edition, 2015

• Harrison's Principles of Internal Medicine 20th Ed., McGraw-Hill, 2018
• Carosi G., Cauda R. et al., Core curriculum. Malattie infettive, 2 edizione, McGraw-Hill, 2016

Altre informazioni

Knowledge and understanding
On successful completion of the Systematic and Integrated Medical-Surgical Pathology Course 2 (PSIMC2), the student will have acquired a detailed knowledge of the pathogenetic, epidemiological, clinical and diagnostic aspects of the pathologies studied. He/she will also be familiar with the main pharmacological and surgical approaches used in allergology and clinical immunology, endocrinology and metabolism, nephrology and infectious diseases. He/she will also be able to conduct a scientific literature review and will have developed autonomy in consulting the main national and international recommendations and guidelines on these diseases.

Application of knowledge and understanding
The Integrated Course in Systematic and Integrated Medical-Surgical Pathology 2 (PSIMC2) will enable the student to deal with clinical cases related to the pathologies studied in a reasoned, up-to-date and evidence-based manner. In particular, he/she will be able to plan and critically evaluate a diagnostic pathway in allergology, immunology, endocrinology and metabolism, nephro-urology and infectious diseases. He/she will also be able to logically link the pathogenetic and pathophysiological aspects of these diseases, their clinical manifestations, the laboratory and imaging diagnostic approaches used and the therapeutic aspects.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	31	MED/36, MED/36, MED/12, MED/13, MED/18, MED/18, BIO/14, MED/08, MED/06, MED/14, MED/24, MED/15, MED/36, MED/12, MED/13, MED/18, MED/46, MED/06, MED/14, MED/24, MED/15

Stampa del 06/05/2025

CLINICAL MEDICINE (3) [1204401]

Offerta didattica a.a. 2024/2025

Docenti: VINCENZO DI LAZZARO

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
Clinical Medicine 3 (CM3) is an integrated course that includes the teaching of neurology, neurosurgery, surgery, radiation and medical oncology, infectious diseases, immunology and allergology, medical imaging, anatomic pathology, and pharmacology. The main objective is to understand the foundations of these fields and move towards the knowledge of the diseases and the basis for medical and surgical treatment.
The course aims to address the themes of the individual subjects in a multidisciplinary manner, sharing different views in the approach to diagnosis and therapy, both medical and surgical, to the pathologies under study. CM3 provides knowledge and experience through formal lectures and seminars, problem-based and case-based learning, and practical sessions at the bedside or in the simulation centre.

Prerequisiti
The correct acquisition of knowledge and understanding of this integrated course requires a good knowledge of anatomy and physiology and students should possess the knowledge and critical understanding of biology, chemistry, physics, and mathematics and the integration of principles across the preclinical sciences. However, there are no prerequisites for other courses.

Contenuti del corso
First part

NEUROLOGY:
The Neurology course is designed to provide a thorough understanding of the scientific basis of the main neurological diseases and how this relates to diagnosis and treatment. By the end of the course, students will be able to explain the basic nature of neurological disease processes from the standpoint of causation, epidemiology, natural history, and the clinical manifestations that result. This will allow the students to clinically assess patients with neurological diseases (symptoms and signs), as well as to interpret invasive and non-invasive instrumental diagnostics (laboratory tests, electroencephalogram, electromyography, motor and somatosensory potentials, neuroradiological exams and angiography). During practical sessions, they will develop further skills in history taking, physical examination, clinical reasoning. The course will also provide the scientific basis of established and novel neurological treatments (pharmacological and surgical) according to the latest guidelines and with a strong translational emphasis. Furthermore, the students will be able to understand and apply the fundamental methods of scientific research within the field of neurological sciences.

History and neurological examination. Cranial nerves: semiology and main syndromes. Motor syndromes: semiology and main syndromes. Sensory syndromes: semiology and main syndromes.
Deep and superficial reflexes: diagnostic significance. Neuro-otology: vertigo, dizziness, spinocerebellar syndromes. Cortical functions and related deficits. Disorders of consciousness, coma and brain death.
Neurophysiological tests (EEG, EMG, evoked potentials), Lumbar puncture: indications and contraindications, Neuroradiological exams (CT, MRI, Angiography and PET), Classification of seizures, epilepsies and epileptic syndromes, Cerebrovascular diseases: hemorrhage and cerebral ischemia, Dementias, Demyelinating diseases, Parkinson's disease, parkinsonian syndromes, dystonia, chorea, Motor neuron diseases, Myelopathies, Encephalitis and meningitis, Peripheral nerve compression syndromes, Polyneuropathies, Myopathies and Muscular disorders, Myasthenia gravis and myasthenic syndromes, Headache syndromes: clinical pictures and differential diagnosis, Diagnosis and treatment of neurological emergencies (intracranial hypertension, stupor and coma, acute spinal compressions, status epilepticus, acute meningoencephalitis, haemorrhages, acute visual impairment), Sleep disorders.

NEUROSURGERY
Prerequisites: Basic knowledge of the anatomy and physiopathology of the Central Nervous System.
The student will have to know the clinical presentation of neurological diseases susceptible to surgical therapy, the diagnostic work-up, and the surgical indication suitable for the specific situation showing that she/he knows the aims of the intervention and possibly proposes alternative approaches. Finally, she/he will have to outline the conditions that require physical and psychological rehabilitation, to indicate the best time to start, to know the theoretical bases and the pathophysiological mechanisms of action, to remember the great human utility and its relapse on the life of

the disease by the patient.
The student's assessment will be based on the understanding of the topics during the frontal lessons, lectures, neuro physiopathology laboratory, observation of surgical procedures, and papers and slides on topics presented in frontal lessons.
Topics include: Intracranial hypertension. Definition of Intracranial System. Concept of "intracranial compliance" Concept of "cerebral self-regulation". Therapy of intracranial hypertension.
Cranio-cerebral trauma. Evaluation of post-traumatic neurological status. Coma state. Assistance and treatment of "severe" cranial trauma. Early complications of cranial trauma (hematomas, etc.). Late complications (hydrocephalus, epilepsy, etc.).
Cerebrovascular diseases of neurosurgical interest. Subarachnoid hemorrhage and intracranial aneurysms. Arteriovenous malformations. Cavernous angiomas. Primary intracerebral hemorrhages.
Neoplastic Pathology of the Central and Peripheral Nervous System. Benign intracranial tumors (diagnosis and anatomic pathology). Primitive and secondary malignant intracranial tumors (pathological diagnosis and anatomy). The surgical treatment of intracranial neoplasms (including the prospects offered by the use of new technologies). Notes on complementary therapies (radiant, chemotherapeutic, genetic).
Expansive pathology of the diencephalo-pituitary region (pituitary adenoma and other non-neoplastic pathology). Anatomy and physiology of the diencephalo-pituitary region. Pituitary adenomas and trans-nasal approaches. Other neoplastic and non-neoplastic pathologies. Neurological syndromes of this region. Benign endocranial hypertension and "empty sella". Hydrocephalus. The genesis of various types of hydrocephalus and their treatment. The circulation of CSF. The obstructive hydrocephalus. The normal pressure hydrocephalus. The child's hydrocephalus.
PSYCHIATRY
General Psychopathology, Schizophrenia Spectrum Disorders, Unipolar, Depression and Anxiety Disorders, Bipolar Disorder, Personality Disorders, Autism Spectrum Disorders, PTSD and Dissociative Disorders, Dual Diagnosis and Addiction, Eating Disorders
MEDICAL IMAGING
The course of medical imaging is intended to foster reasoning and cognitive skills in the process of differential diagnosis of diseases based on images obtained by means of ultrasound, conventional X-ray, Computed Tomography, Magnetic Resonance and Nuclear Medicine techniques.
Problem identification begins with a complete history and physical examination. From the information thus obtained, it is possible to select appropriate imaging procedures that may assist in establishing a diagnosis.
The course will guide the students throughout the challenges of problem-solving with imaging in clinical practice with highlights on image interpretation errors and image artifacts as well as workflow requirements oriented to minimize “finding misses” (false negatives) or “overdiagnosis” (false positives).
During the course, discussion on imaging findings will support differential diagnosis of first approach scenarios and post-treatment imaging changes (expected and unexpected).
Image-guided diagnostic and therapeutic procedures will be theoretically described along with specific indications and technical challenges. Clinical training in the units of diagnostic imaging and interventional radiology will allow the students to verify the acquired knowledge in “real-life” scenarios.

Topics to be covered:
- Imaging of pathologies affecting the Brain, Spine and Neck
- Neuroimaging after surgical, medical and radiation treatment
- Diagnostic imaging and interventional radiology in infectious diseases
- Imaging of inflammatory immune-mediated processes
- Management of allergic reactions to contrast media and risk mitigation

ANATOMIC PATHOLOGY
Pathology of CNS
- Intracranial hypertension.
- Cerebral edema.
- Hydrocephalus.
- Infectious pathology of brain and meninges.
- Vascular diseases (ischemic and hemorrhagic).
- Tumours of CNS.
- Demyelinating diseases.

RADIATION AND MEDICAL ONCOLOGY
Management of low-grade primary CNS tumors and high grade CNS tumors.
Treatment of Brain metastases. Principles of Supportive care and palliation in brain tumors and brain metastases.
Treatment of tumors of PNS (MPNST and others). Spine metastases and their management.
Neurologic paraneoplastic syndromes. Primary brain lymphomas.
Arteriovenous malformation , Acoustic Neuroma and Meningioma, Radionecrosis and medical management

Second part
INFECTIOUS DISEASES
Sepsis, Endocarditis, Meningitis, Encephalitis, Pneumonia, Malaria, Typhus, Cholera, Tuberculosis, Influenza, Diarrhea, Hepatitis, Parotitis, Amoebiasis, Tetanus, Botulism
Herpetic infections, infectious mononucleosis, CMV, Leishmaniasis, HIV/AIDS, Nosocomial Infections, COVID-19

SURGERY:
Surgical infections:
Risk factors for infections in surgical patients; The immunosuppressed patient.
Trauma and sepsis; Interactions between the host and therapy: blood transfusion, blood sugar, nutritional support, thermal homeostasis

Prevention of infections in surgical patients: asepsis and antisepsis. Hand hygiene. Preoperative skin care.
Clean, clean-contaminated, contaminated procedures.
Surgical site infections: superficial, deep, organ/space infections
Wound care, catheter care, vascular lines, role of drains, open abdomen, wound irrigation
Antibiotic use in surgery:
Antibiotic prophylaxis: principles; Antibiotic treatment: principles
Antibiotic choice, Antibiotic toxicity

Clostridium-difficile associated disease
Postoperative pneumonia: prevention and treatment
Urinary tract infections
Intra-abdominal infections: Diverticulitis, appendicitis, bowel perforation from penetrating injury, anastomotic disruption
Skin and soft tissue infections, Fournier gangrene, Vacuum assisted treatment
Fungal infections: prevention and treatment
Surgical tuberculosis
HP disease
Microbioma in the pathogenesis of diseases

IMMUNOLOGY AND ALLERGOLOGY

The Allergy and Clinical Immunology course will focus on the pathogenesis, epidemiology, clinical manifestations, diagnosis, and principles of treatment of autoimmune diseases, allergies, and primary immunodeficiency states. In particular, the following topics will be covered:

-Cellular and molecular mechanisms of immune and allergic diseases;
• Connective tissue diseases:
o Systemic lupus erythematosus;
o Antiphospholipid syndrome;
o Systemic sclerosis;
o Sjogren's syndrome;
o Idiopathic inflammatory myopathies;
o Undifferentiated connective tissue disease;
o Mixed connective tissue disease;
o Overlap syndromes.
• Vasculitis:
o Giant cell arteritis;
o Takayasu arteritis;
o Polyarteritis nodosa;
o Kawasaki disease;
o Microscopic polyangiitis;
o Granulomatosis with polyangiitis;
o Eosinophilic granulomatosis with polyangiitis;
o Cryoglobulinemic vasculitis;
o IgA vasculitis;
o Primary central nervous system vasculitis;
o Behçet syndrome.
• Allergy:
o Asthma;
o Rhinitis;
o Food allergy;
o Drug allergy;
o Insect allergy;
o Urticaria and angioedema;
o Atopic and contact dermatitis;
o Anaphylaxis.
• Primary immunodeficiency states:
o Principles of antibody deficiencies:
• ☐ Common variable immunodeficiency in adults;
• ☐ Selective IgA deficiency;
• ☐ Agammaglobulinemia.
• Principles of chromosomal breakage syndromes associated with immunodeficiency:
• ☐ Ataxia-telangectasia

• Principles of combined immunodeficiencies;
• Principles of phagocytic and complement system disorders;
• Principles of other well-defined immunodeficiency syndromes:
• ☐ DiGeorge syndrome;
• ☐ Wiskott-Aldrich syndromes.

PHARMACOLOGY
General and Clinical Pharmacology of CNS and PNS active drugs, Antimicrobial and antiviral agents
Main anticancer drugs, with emphasis on taxonomy and risk: benefit profile
Principles of development and clinical application of immunomodulating-immunosuppressive agents

Metodi didattici

The teaching methodology will consist of a combination of traditional platform lessons, class seminars, interactive discussion on selected topics or on topics of interest for the students, and practical activities will be performed in the clinics. The students will also be stimulated to select and understand an article from the medical literature and to briefly expose its contents to the whole class.

Modalità di verifica dell'apprendimento

Learning Assessment Methodology
The assessment of students learning will take place at the end of the course, within the timeframe set by the academic calendar, by a two-step examination. The assessment will be subdivided into two parts. The first one will include neurology, neurosurgery, psychiatry, medical imaging, and anatomic pathology. The second will include infectious diseases, surgery, immunology and allergology, and pharmacology. Each part will consist of a written test with the administration of multiple-choice questionnaires and an oral examination for students that will pass the questionnaire. The examination aims at verifying the acquisition of knowledge by the student.

Grading Criteria
For the first part, the multiple-choice questionnaire will consist of 40 questions referred to neurology (10 questions), neurosurgery (4 questions), psychiatry (4 questions), medical imaging (4 questions), and anatomic pathology (4 questions), radiation and medical oncology (4 questions), neuropharmacology (10). The minimum score to pass the written test is 18/30 (24 correct answers). Students who pass the written exam will undergo an oral interview regarding a clinical case presentation related to diseases covered in CM3. For the second part, the multiple-choice questionnaire will consist of 30 questions referred to infectious diseases (8 questions), immunology and allergology (8 questions), and pharmacology (8 questions), surgery (6 questions). For each correct answer, 1 point will be gained. The minimum score to pass the written test is 18 (18 correct answers). Students need to demonstrate adequate levels of whole-round understanding of all topics covered in the course alongside suitable communication and judgement skills. The final grade will be calculated considering the grades of the first and the second part.

Testi di riferimento

- Allan H. Ropper, Martin A. Samuels, Joshua P. Klein, Sashank Prasad. “Adam and Victor’s Principles of Neurology”. 12th Edition.
- Joseph Jankovic, John Mazziotta, Scott Pomeroy, Nancy Newman. “Bradley and Daroff’s Neurology in Clinical Practice”. 8th Edition

Neurosurgery
Ramez Kirollos, Adel Helmy, Simon Thomson, Peter Hutchinson “Oxford Textbook of Neurological Surgery”
Mark S. Greenberg “Handbook of Neurosurgery”

Psychiatry
Kaplan & Sadock’s Pocket Handbook of Clinical Psychiatry (Sixth Edition)

Surgery
Sabiston Textbook of Surgery. The Biological Basis of Modern Surgical Practice 21st Edition – January 8, 2021

Infectious diseases
Harrison’s Principles of Internal Medicine 21st edition – McGraw Hill

Radiation and Medical Oncology
John E. Niederhuber, James O. Armitage, Michael B. Kastan, James H. Doroshow, Joel E. Tepper. Abeloff’s Clinical Oncology, 6th Edition,
K.S. Cliffford Chao, Carlos A. Perez, Tony J.C. Wang. Radiation Oncology Management Decisions (Fourth Edition), Wolters Kluwer

Pharmacology
Bibliography will be suggested ad hoc during classes

Medical imaging

- Essentials of Osborn's Brain: A Fundamental Guide for Residents and Fellows. 1st Edition – Authors: Anne G. Osborn. Publisher: Elsevier Science Health Science; 1° edizione (6 dicembre 2019) - ISBN-13978-0323713207
- Core Radiology: A visual approach to Diagnostic Imaging. 1st Edition - Authors: Jacob Mandell. Publisher: Cambridge University Press – ISBN-13978-1107679689
- Learning Radiology: Recognizing the Basics. 4th Edition – Authors: William Herring. Publisher: Elsevier - ISBN-13978-0323567299

Anatomic pathology
Robbins & Cotran, Pathologic Basis of Disease, 10th Ed., Elsevier.

Altre informazioni

Knowledge and understanding
Students must achieve an adequate comprehension and knowledge of the different subjects, including neurology, neurosurgery, surgery, oncology, radiotherapy, infectious diseases, immunology and allergology, medical imaging, anatomic pathology and pharmacology. Students will learn how different diseases may relate to each other and understand the importance of a multidisciplinary approach to patients.
Applying knowledge and understanding
Students will learn how to build a clinical path that starts from the pathophysiological bases of diagnostics and lands at outlining the optimal treatment based on the specific characteristics of the individual patient.
Making judgments
Students will become independent in clinical reasoning. When confronted with clinical challenges, they should be able to correctly process the available data and propose an adequate sequence of diagnostic and therapeutic interventions.
Communication skills
Students are expected to develop accurate and correct scientific language, which is crucial for an adequate understanding of medical subjects. At the same time, they will develop communication skills to interact with colleagues and patients effectively.
Learning skills
Students will become able to develop and constantly update the knowledge of the subjects under study, with particular reference to the consultation of textbooks, bibliographic material, scientific journals, international practice guidelines, and other information on the web.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	24	MED/36, MED/36, MED/27, MED/27, MED/18, MED/18, BIO/14, MED/26, MED/26, MED/08, MED/25, MED/09, MED/09, MED/06, MED/06, MED/17, MED/17

Stampa del 06/05/2025

CLINICAL MEDICINE (4) [1204402]

Offerta didattica a.a. 2024/2025

Docenti: MARCO CARICATO

Periodo: Secondo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	25	MED/36, MED/36, MED/36, MED/34, MED/30, MED/31, MED/18, MED/28, BIO/14, MED/29, MED/08, MED/33, MED/16, MED/34, MED/30, MED/31, MED/18, MED/33, MED/16

Stampa del 06/05/2025

CLINICAL MEDICINE (5) [1204501]

Offerta didattica a.a. 2024/2025

Docenti: UMBERTO VESPASIANI GENTILUCCI

Periodo: Primo Ciclo Semestrale

Obiettivi formativi

Objective of the course is that of integrating the knowledge concerning the main internal medicine diseases occurring throughout the lifespan, from paediatric age until adulthood and elderly, including woman gynaecological disorders. In the context of each specific course, pertinent elements of Pharmacology, Radiology and morbid Anatomy will be also given.
The pediatric population has unique features due to age-related physiology and burden of diseases, and their specific needs require specific approaches. In the course of Pediatrics, the students will learn the basics of pediatrics, starting from early postnatal life until the pubertal progression and the final stature and sexual maturation. They will be also introduced to the principles of neurological development of the newborn and the most prevalent neuropsychiatric disorders in pediatric age.

Teaching of Internal Medicine will be aimed to the presentation of the most important clinical pictures in which multiorgan interaction and differential diagnosis are crucial. A particular attention will be given also to the principal end organ decompensations and failures.
In the course of Geriatrics, students will understand the unique features of older people due to age-related physiological changes and burden of diseases, and their specific needs. In this course the students will learn the basics of geriatric medicine, focusing on the concepts of healthy ageing and related constructs (functional capacity, frailty, resilience) and on the management of geriatric syndromes and multimorbidity.

In the course of Gynecology, students should be able to recognize the clinical presentation of the main gynecologic diseases and describe their clinical management in terms of diagnosis and treatment.
In the course of Obstetrics, the students will learn the basics of obstetric medicine, focusing on the concepts of healthy and pathological pregnancy and related constructs (especially the relationship between pregnancy and the most common medical or surgical comorbidities) and on the management of the most common syndromes of gestation.
The course of Clinical Psychology introduces students to the core principles of this discipline. By the end of the course, students will understand what Clinical Psychology is, the methods to conduct research in this field, mental disorders and their psychological treatment.
In the context of this integrated course, the teaching of Radiology and Pharmacology will be consistent with the topics treated in the other disciplines, while the teaching of Morbid Anatomy will be centred to Gynecologic Pathology and and Breast Pathology.

Prerequisiti

none

Contenuti del corso

Pediatrics
1. Transition from fetal to neonatal life, clinical examination of the newborn and classification according to weight (SGA, AGA and LGA) and gestational age (preterm and term newborn).
2. Breastfeeding, neonatal screening and care of healthy neonates
3. Asphyxia and principles of resuscitation
4. Neonatal jaundice, hematological and metabolic disorders of the newborn
5. Respiratory disorders of the newborn
6. Respiratory disorders of the child (cistic fibrosis, asthma, bronchiolitis and pneumonia)
7. Infections in newborns
8. Infections in children (Immunization, exanthema. Fever. Febrile convulsions. Meningoencephalitis. Pharyngitis, tonsillitis, otitis. Urinary tract infection. Hemolitic uremic syndrome)
9. Notes on pediatric cardiology (congenital heart disease)
10. Body development, pubertal progression and related pathological conditions (Growth disturbances, Growth hormone deficiency, early and delayed puberty.)
11. Diabetes
12. Gastroenterological disorder (acute and chronic diarrhea, celiac disease, gastroesophageal reflux, appendicitis, volvulus and invagination).

13. Hematological disease of childhood (Anemia, thrombocytopenia, hemophilia, leukemia, lymphoanenopathy and lymphomas)
14. Pediatric oncology (Neuroblastoma, Wilms tumor, CNS tumors and neurofibromatosis)
15. Rheumatic diseases of infancy (Rheumatic fever, Henoch Schonlein purpura, Kawasaki disease)
16. Child abuse and head trauma

Pediatric neuropsychiatry
• Neurological examination in the newborn.
• Neurological development of the newborn
• Autism spectrum disorder
• Epilepsy principles
• Genetic generalized epilepsies
• Epilepsy in infancy and adolescence

Internal Medicine
• Approach to the patient with anemia
• Approach to the patient with hydroelectrolytic disorders:
-hyponatremia and hypernatremia
-hypokalemia ed hyperkaliemia
-hypocalcemiia hypercalcemia
• Approach to the patient with jaundice
• Approach to the patient with fever of unknown origin
• Approach to the patient with sepsis
• Approach to the patient with ascites
• Approach to the patient with hepatic failure
• Approach to the patient with cardiac failure
• Approach to the patient with renal failure
• Approach to the patient with pulmonary infection and respiratory failure
• Approach to the patient with arterial hypertension
• Approach to the patient with dyslipidemia
• Approach to the patient with type 2 diabetes mellitus

Geriatrics
1. Geriatric patients and geriatric medicine
2. Principles of gerontology
3. Evaluation of organ function in older people: pearl and pitfalls:
– Heart
– Lung
– Kidney
4. Beyond diseases: the Geriatric Syndromes
– Delirium
– Syncope & falls
– Urinary incontinence
– Malnutrition
5. The management of the complex geriatric patient:
– Multimorbidity and polypharmacotherapy
– Palliative care and end-of-life care

Gynecology
1. Anatomy of the female reproductive tract. Physiology of the hypophyseal and ovarian functions. The menstrual cycle.
2. Gynecologic Endocrinology: Amenorrhea. Chronic anovulation. Polycystic ovarian syndrome. Hyperandrogenism. Adrenogenital syndrome. Hormonal contraception. Menopause, climacteric syndrome and hormone replacement therapy.
3. Benign Gynecologic Diseases: Abnormal uterine bleeding. Uterine myomas. Endometrial polyps and hyperplasia. Endometriosis. Ovarian cysts. Urogynecology: pelvic organ prolapse, urinary incontinence. Infectious diseases of the genital tract. Vulvar dermatoses.
4. Gynecologic Oncology: Ovarian, endometrial, cervical and vulvar cancer. Gestational trophoblastic disease. Screening tests for cervical and breast cancer.

Obstetrics
1. Physiological changes in pregnancy
2. Embryogenesis and fetal development
3. The main obstetric syndromes: recognition and management notes
4. Autoimmune diseases in pregnancy
5. The thyroid: normality and disease in pregnancy
6. Management of hypertension in pregnancy
7. Sepsis and Infectious Diseases in pregnancy
8. Management of antibiotic therapy in pregnancy

9. Effects of pollution on gestation
10. Liver disease in pregnancy
11. Cardiac arrest in pregnancy
12. Physiology of Labor – Normal Labor
13. Vaginal Delivery
14. Intrapartum Assessment
15. Management of Obstetrical Hemorrhage
16. Preterm Birth

Clinical Psychology
Clinical Psychology in Historical Context
Research in Psychopathology
Anxiety Disorders
Somatoform and Dissociative Disorders
Depressive and Mood Disorders
Physical Disorders and Health Psychology
Eating Disorders
Gender Identity Disorders
Personality Disorders
Schizophrenia
Well-being promotion

Pharmacology
Basic knowledge of poisoning, overdose and addiction drugs: toxicity, symptoms, diagnosis, recommended treatment principles and antidotes
Medical toxicology of drugs of abuse: alcohol, amphetamines, cocaine, heroin and cannabis

Metodi didattici

The classic frontal teaching will be alternated with the presentation and discussion of clinical cases shown as vignettes based on weekly reading assignments. Students will be guided in an interactive way through the different aspects of the topic. For some courses, e.g. Geriatrics, at the end of each lesson the students will perform a self-assessment test based on multiple-choice questions. For the clinical practice, students will be required to participate in the grand rounds and will be asked to evaluate clinical cases that will be discussed with the clinical tutor.
The Clinical Psychology course is arranged in forms of lectures, seminars, discussions and role-plays. Lectures in form of presentations provide key-information, but a lot of work is done during discussions in small groups and role-plays. Materials for class activities are provided in printed and/or electronic form. Students will be required to watch online videos throughout the semester, so they should plan their schedule so that they can keep up with videos viewing (some of them have to be watched before lectures).

Modalità di verifica dell'apprendimento

The final exam will be based on 75 multiple-choice questions (4 possible answers for each question, only 1 correct). Each correct answer will be assigned 0.4 points, while unanswered or incorrect questions will be assigned 0 points. The exam will be passed with a minimum of 45 correct answers (18 points).

Progress tests made up by multiple-choice questions can be performed during the semester at the discretion of the teacher of each course as a formative assessment intended to provide the students and the teacher a feedback on the knowledge and understanding of the topics treated. At the discretion of the teacher, the results of these progress tests may be weighted in the final exam grade, in accordance with the course credits in question.

Testi di riferimento

Pediatrics: Nelson, Essentials of Pediatrics. Elsevier, 2022.

Pediatric Neuropsychiatry: Material provided by the teachers.

Internal Medicine: Harrison, Principles of internal medicine. Mc Grow Hill, latest edition.

Geriatrics: Material provided by the teachers.

Clinical Psychology:
1) Handbook of Adult Clinical Psychology: An Evidence Based Practice Approach
Alan Carr & Muireann McNulty (Editors)
2) The Oxford Handbook of Clinical Psychology: Updated Edition (Oxford Library of Psychology)
David H. Barlow (Editor)

3) Handbook of Evidence-Based Practice in Clinical Psychology, Adult Disorders
Michel Hersen
4) Clinical Psychology, Bridging Science and Practice Ninth Edition, PEARSON
Bernstein, Teachman, Olatunji, Lilienfeld
5) Essentials of Abnormal Psychology
Durand, Barlow & Hofmann, Cengage Learning.
6) Casebook in abnormal psychology.
Brown, T. A., & Barlow, D. H. Cengage Learning.
Further information will be communicated to the students at the start of the course.

Gynecology: Williams Gynecology, 4e. Author: Barbara L. Hoffman, John O. Schorge, Lisa M. Halvorson, Cherine A. Hamid, Marlene M. Corton, Joseph I. Schaffer. Year of publication: 2020. Publisher: McGraw-Hill.

Obstetrics: Williams Obstetrics, 26e. Author: F. Gary Cunningham, Kenneth J. Leveno, Jodi S. Dashe, Barbara L. Hoffman, Catherine Y. Spong, Brian M. Casey. Year of publication: 2022. Publisher: McGraw Hill

Morbid Anatomy: Robbins & Cotran Pathologic Basis of Disease 10th Edition - 2022
Pharmacology: Bertram G. Katzung and Anthony J. Trevor. Basic and Clinical Pharmacology 15th edition. Lange Publishing Co.; Goodman and Gilman's The Pharmacological Basis of Therapeutics 14th edition. McGraw Hill Publishing Co.

Altre informazioni

At the end of the course of Pediatrics, students will learn to recognize the physiological somatic evolution and the main pathological conditions observed in the newborn, child and adolescent, and to manage the relative therapeutic approaches. Furthermore, they will be able to apply these concepts to real clinical situations observed in the neonatal, childhood and adolescent period.
Through the course of pediatric neuropsychiatry, students are expected to learn the neuropsychiatric signs and syndromes specific of the pediatric population and to apply these concepts to actual clinical situations.
At the end of the course of Internal Medicine, students will learn how to approach different complex clinical scenarios starting from differential diagnosis and arriving, through the proper use of the diagnostic armamentarium, until a tailored therapeutic approach.
Through the course of Geriatrics, students are expected to learn the specific features of a geriatric patient, to understand what are the underpinnings of the management strategies for these patients, and to be able to apply these concepts to different clinical situations.

At the end of the course of Gynecology, students are expected to know the basic principles of the diagnosis and treatment of gynecologic diseases, including patient counselling about contraceptive options, and to understand what are the underpinnings of the management strategies for these patients.

At the end of the course of Obstetrics, students will learn the specific features of the obstetric patients and the underpinnings of the management strategies for these patients, becoming able to apply these concepts to actual clinical situations.

At the end of the course of Clinical Psychology, the following learning objectives are expected to be achieved by students: understand the core principles of Clinical Psychology; describe research methods that are used to investigate Clinical Psychology phenomena; describe the symptoms and the associated manifestations of various mental disorders; make differential diagnoses based on the DSM-5; analyse the core elements of evidence-based therapies for various disorders; describe some well-being promotion strategies; effectively communicate diagnosis and prognosis.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	35	MED/36, MED/40, MED/40, M-PSI/08, MED/38, BIO/14, MED/39, MED/08, MED/09, MED/09, MED/09, MED/40, MED/38, MED/38, MED/09, MED/09

Dermatology and plastic surgery [1204502]

Offerta didattica a.a. 2024/2025

Docenti: STEFANIA TENNA

Periodo: Secondo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	14	BIO/14, MED/08, MED/19, MED/25, MED/35, MED/36, MED/19, MED/25, MED/35

Stampa del 06/05/2025

CLINICAL MEDICINE (7) [1204601]

Offerta didattica a.a. 2024/2025

Docenti: FRANCESCO DE MICCO, MASSIMO MAZZILLI

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
The course aims to provide students with the knowledge and skills: (a) to understand the legal framework of medical obligations towards patients, the judiciary and the citizens, to understand the legal framework of medical liability, to critically evaluate forensic issues related to the ascertainment of death and its causes, to understand the main deontological issues of the medical profession; (b) to identify and address health issues at community level, with a focus on epidemiological elements, public health interventions and prevention, health promotion, diagnosis, treatment and rehabilitation in Primary Health Care; (c) on the history of Occupational Medicine, the role of the Occupational Physician and other figures in the prevention system, the impact of the main occupational risk factors on workers' health, tools and methods for diagnosing occupational diseases; (d) To guide students in reasoning through the most appropriate diagnostic-therapeutic pathways for clinical scenarios characterized by multimorbidity, they will be challenged to address issues of differential diagnosis, diagnostic and therapeutic prioritization, and drug interactions; (e) the international public health module aims to provide the students with a better understanding of the international pattern of disease, their determinants and life styles,social and environmental factors in death and disease.The importance of different prevention strategies both at the clinical and public health level. Epidemics. Prevention principles and different strategies for prevention. The role of Public Health in eradicating and controlling diseases with significant examples. Examples of important observational and clinical studies with important public health; (f) it will provide a braod, global overview of health care systems responses in relation to major clinical and public health challenges, such as commor chronic disease as case studies, as well as an introduction to the role of health economics in clinical medicine and clinical decision-making.

Prerequisiti
According to the Study Manifesto, there is no propaedeuticity for this Integrated Course.

Contenuti del corso
Forensic Medicine & Medical Ethics (FDM)
1. Forensic criminal medicine
- Concepts of criminal law
- Assault and personal injury
- Crimes against life
2. Forensic civil medicine
- Legal capacity and capacity to act
- Interdiction, incapacitation and support administration
3. Personal damage and compensation
4. Patient Safety and Healthcare Risk Management
5. Informed Consent
6. Medical records
7. Legal medicine of medical malpractice
8. Professional secrecy and the right to privacy
9. Report, crime report, mandatory health reports
10. Assessment and Compulsory Health Treatment
11. The pathophysiology of death and its ascertainment
12. Forensic pathology
- Transportation Injuries
- The Examination of Wounds
- Firearm and Explosive Injuries
- Asphyxia
13. Forensic toxicology
- Poisoning diagnosis
- Drug legislation
- Driving under the influence of alcohol and drugs
14. Forensic genetics
15. Crime Scene Investigation
16. Himanitarian forensic medicine: torture, aging the living

17. Medico-legal implications of telemedicine, robotics and artificial intelligence
18. Social and private insurance
19. Deontology and Code of Ethics

General Practice and Community Care (VL)
1. Introduction and general fundamentals of Occupational Medicine
2. Occupational toxicology and industrial hygiene: general concepts
3. Occupational diseases due to Physical risk factors
- Noise
- Hand-arm and whole-body vibration
- Ionizing radiations
- Manual handling of loads
- Video displays.
4. Occupational diseases due to Chemical risk factors
- Metals
- Solvents
- Others.
5. Occupational diseases due to biological risk factors
- Viruses
- Bacteria
- Protozoa
- Fungi.
6. Occupational diseases due to psychosocial risk factors

General Practice and Community Care (PP)
1. Introduction to Community Medicine
- Definition, scope, and importance
- Historical evolution and milestones in public health
2. Epidemiology
- Basic concepts in epidemiology: measures of disease frequency and association
- Study designs: descriptive, analytical, and experimental
3. Health System and Health Economics
- Structure and functions of health systems
- The Italian NHS and evolution of PHC
- Health policies and management
- Principles of health economics and their application in health care delivery
4. Prevention, environmental Health and Occupational Health
- Impact of environment on health: water, sanitation, air pollution
- Occupational health: workplace hazards, occupational diseases, and preventive measures
5. Maternal and Child Health
- Programs and policies for maternal and child health
- Nutrition, immunization, and family planning services
6. Public Health Nutrition
- Nutritional assessment and intervention programs
- Food security and nutritional epidemiology
7. Communicable and Non-Communicable Diseases
- Control and prevention strategies
- Surveillance systems and outbreak investigation
8. Mental Health
- Public health perspective on mental health issues
- Community-based approaches to mental health promotion
9. Health Education and Health Promotion
- Theories and models of health behavior change
- Strategies for effective health communication and education

General Practice and Community Care (UVG/AC)
Different clinical cases will be addressed, reflecting diseases already known to the students, with the aim of developing clinical orientation and reasoning.

Health Economics and Hospital Management (SS)
1. Case studies of health systems responses in both high-income and low-resource settings
2. High-risk versus general population strategies
3. Multimorbidity Prevention and Clinical Management
4. Cardiovascular Disease Prevention and Management in high- and low-income countries
5. Diabetes Prevention and Management in high- and low-income countries

6. Neurogenerative Disease Prevention
7. Psychiatric Disease Prevention
8. The role of economics in clinical medicine
- Should we fund all 'effective' treatments?
- Opportunity cost and clinical decision making
- Need for health versus need for health care
9. Taking a health system perspective to decision-making
- Value for money for health system investment
10. Introduction of Economic Evaluation Methods
- Cost-effectiveness and cost-benefit analyses
- Cost-utility analysis
11. Are clinical trials enough?
- Health Technology Assessment and clinical medicine
- Going beyond the trial
- Taking a lifetime perspective for clinical decisions
12. Case studies of health Economics
- Should we use age thresholds for cancer screening?
- Economics of avoidable hospitalisation
- Treating depression in clinical practice

Hygiene and Public Health International (MT)
1. International Trends in Mortality, Life expectancy and other public health indicators
2. Social Determinants of Health
3. The impact of the built environment
4. he life course approach to prevention
5. Prevention strategies
6. Public Health success stories and heroes
7. COVID: lessons learned
8. The impact of meaningful clinical trials: The Women Health Initiative
9. Guest lecture by an international public health expert (topic to be decided).
10. Students presentation (by group)

Metodi didattici
Forensic Medicine & Medical Ethics (FDM)
- Lectures, case analyses, reflective learning, tutorials in the Simulation Centre, autopsies

General Practice and Community Care (VL)
- Lectures and classroom discussions, assisted by presentations and handouts.

General Practice and Community Care (PP)
- Lectures and tutorials, practical sessions and "virtual experiences", group discussions and seminars.

General Practice and Community Care (UVG/AC)
- Lectures, group discussions and seminars

Health Economics and Hospital Management (SS)
- Lectures and case studies, all-class and small-team discussions, literature review and exercises

Hygiene and Public Health International (MT)
- Lectures and tutorials, in class discussions and exercises.

Modalità di verifica dell'apprendimento
Written examination aimed at verifying the actual degree of learning, the ability to critically revise the acquired knowledge and to explain it in an understandable manner, the ability to identify the elements characterising the course topics.

- 31 multiple-choice questions (MCQ).

- 2 points for each correct answer; 0 for an incorrect answer or an answer not given.

- The number of questions will be proportional to the number of CFUs in each module:
a. Hygiene and Public Health International (MT): 5 MCQ

b. Health Economics and Hospital Management (SS): 3 MCQ
c. Forensic Medicine (International) & Medical Ethics (FDM): 7 MCQ
d. General Practice and Community Care (VL): 3 MCQ
e. General Practice and Community Care (PP): 3 MCQ
f. General Practice and Community Care (UVG/AC): 10 MCQ

- To pass the examination, the student must correctly answer at least half of the questions for each module, according to the following thresholds:
a. Hygiene and Public Health International (MT): 3 MCQ
b. Health Economics and Hospital Management (SS): 2 MCQ
c. Forensic Medicine (International) & Medical Ethics (FDM): 4 MCQ
d. General Practice and Community Care (VL): 2 MCQ
e. General Practice and Community Care (PP): 2 MCQ
f. General Practice and Community Care (UVG/AC): 5 MCQ

Testi di riferimento

Forensic Medicine & Medical Ethics (FDM)
- Slides and teaching material produced by the lecturer and uploaded on the e-learning platform.
- Knight B, Saukko PJ. Knight's Forensic Pathology. Fourth edition. CRC Press, Taylor & Francis Group; 2016 (per approfondire).
- Payne-James J, Simpson K, Shepherd R. Simpson's Forensic Medicine. 13th ed. Hodder Arnold; 2011. Accessed July 30, 2024 (per approfondire).
- Jonsen AR, Siegler M, Winslade WJ, Mishra R. Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine. 9. ed. McGraw Hill; 2022 (per approfondire)

General Practice and Community Care (VL)
- LaDou J, Harrison R. Current Diagnosis & Treatment: Occupational and Environmental Medicine. McGraw-Hill Edizioni, 2021

General Practice and Community Care (PP)
- Ricciardi W & Boccia S. Igiene. Medicina preventiva. Sanità Pubblica. Idelson-Gnocchi, 2021.
- Ichiro Kawachi, Iain Lang, Walter Ricciardi. Oxford Handbook of Public Health Practice 4e Oxford University Press, 23 apr 2020 - 688 pagine

General Practice and Community Care (UVG/AC)
- Harrison, Principles of internal medicine. Mc Grow Hill, latest edition.

Health Economics and Hospital Management (SS)
- Slides and materials produced/distributed by the lecturer, including scientific articles focusing on the specific issue discussed in class

Hygiene and Public Health International (MT)
- Slides and materials produced/distributed by the lecturer, including scientific articles focusing on the specific issue discussed in class

Altre informazioni

Forensic Medicine (FDM)
- Knowledge and Understanding
To know the Italian legislation in medical matters, the main aspects of clinical forensic medicine, and forensic pathology.
- Applied Knowledge and Understanding
Provide a differential diagnosis based on specific macroscopic and microscopic examinations, also considering the data from the crime scene investigation and previous clinical data; participate in the study or discussion of forensic pathology cases, medical malpractice in civil and criminal contexts, healthcare risk management; learn the practical aspects of diagnostic tools in the forensic pathology field, understanding when to use them and how to perform them.
- Autonomy of Judgment
Use critical thinking to apply medical-biological knowledge in order to correctly develop, interpret, and apply legal regulations concerning medical practice.
- Communication Skills
Present and discuss their decisions with co-workers and various professionals in order to ensure transparency, accountability and enrich their point of view.

- Learning Ability
To independently and critically approach the study of forensic medicine for the acquisition of new knowledge and understanding of new phenomena.

General Practice and Community Care (VL)
- Knowledge and Understanding
Acquire knowledge on the basic principles of occupational medicine and methods to analyze occupational medicine issues.
- Applied Knowledge and Understanding
Understand the impact of the main occupational risk factors on workers' health, acquire knowledge for the diagnosis of common work related disorders, understand the relationship between the occupational medicine and health systems.
- Autonomy of Judgment
Acquire skills to independently evaluate specific occupational medicine issues and propose solutions.
- Communication Skills
Acquire skills to communicate and discuss general occupational medicine problems with un-expert people, co-workers and various professionals using an appropriate terminology.
- Learning Ability
To independently and critically update knowledge on occupational medicine topics through the study of scientific texts and publications.

General Practice and Community Care (PP)
- Knowledge and Understanding
Understand the principles and practices of community medicine, including disease prevention and health promotion strategies.
- Applied Knowledge and Understanding
Develop the ability to assess the health needs of populations and implement effective public health programs.
- Autonomy of Judgment
Acquire skills in epidemiological methods, data analysis, and the application of these methods in public health settings.
- Communication Skills
Learn to design, execute, and evaluate public health interventions, considering cultural, social, and economic factors.
- Learning Ability
Enhance their capability to communicate health information effectively to various audiences, including policymakers, health professionals, and the general public.

General Practice and Community Care (UVG/AC)
- Knowledge and Understanding
Navigate differential diagnosis in complex clinical cases
- Applied Knowledge and Understanding
Evaluate a therapeutic program in the context of multimorbidity, considering potential adverse drug effects and possible drug interactions
- Autonomy of Judgment
Orient themselves regarding clinical priorities in the use of diagnostic and therapeutic tools and resources. Establish an appropriate follow-up plan for specific cases, also assessing when and how to refer to different specialists.

Health Economics and Hospital Management (SS)
- Knowledge and Understanding
Analysis of factors driving variations in health care systems responses to major clinical and public health challenges
- Applied Knowledge and Understanding
Discussion of case studies based on major common chronic disease in both high-income and low-resource settings
- Autonomy of Judgment
Understanding basic economic evaluation methods to inform clinical and public health decision making
- Communication Skills
Open discussion of case studies in an interactive fashion (both all class and small teams)
- Learning Ability
Developing critical thinking to assess the available evidence and inform clinical and public health decision making

Hygiene and Public Health International (MT)
- Knowledge and Understanding
The role and importance of the social determinants of health. The built environment and Public Health
- Applied Knowledge and Understanding
How to analyze international pattern of disease and death. Indicator of the health of a population.

- Autonomy of Judgment
Utilize critical thinking and critical analyses of data to design and implement public health and prevention programs.
- Communication Skills
Learn how to communicate with experts, societal leaders, and the general population the results of analyses and scientific studies.
- Learning Ability
Becoming a life long learner

Medical Ethics (FDM)
- Knowledge and Understanding
To know and understand the deontological principles that characterise the professional autonomy and responsibility of the physician.
- Applied Knowledge and Understanding
Deciding, planning and implementing effective and safe care interventions that comply with quality standards and are based on scientific evidence, respecting legal and ethical responsibilities, with a personalised and integrated approach that considers individual and community needs, thus improving the health status and general well-being of the people involved.
- Autonomy of Judgment
Use critical thinking to understand the phenomena that characterise the reality of care and deontological reflection.
- Communication Skills
Presenting and discussing one's decisions with colleagues and other professionals, even in situations of moral distress, to ensure transparency, accountability and enrich one's point of view, contributing to a collaborative and understanding working environment.
- Learning Ability
Deal autonomously and critically with the study of deontology for the acquisition of new knowledge and understanding of new phenomena

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	26	MED/09, MED/09, MED/42, MED/44, SECS-P/07, M-FIL/03, MED/43, MED/09, MED/42

Stampa del 06/05/2025

CLINICAL MEDICINE (8) [1204602]

Offerta didattica a.a. 2024/2025

Docenti: FRANCESCO TRAVAGLINO

Periodo: Secondo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	24	MED/13, MED/18, MED/18, MED/41, MED/41, MED/26, MED/33, MED/09, MED/18, MED/41, MED/26, MED/33

Stampa del 06/05/2025

ENGLISH LANGUAGE [1204205]

Offerta didattica a.a. 2024/2025

Docenti: ROBERTA ARONICA

Periodo: Ciclo Annuale Unico

Obiettivi formativi
The course focuses on scientific terminology and abstract writing.

Prerequisiti
Each student has to pass the first year test before they can take the final exam.

Contenuti del corso
The course focuses on the reading comprehension of medical articles and on abstract writing technique

Metodi didattici
The whole course is taught through frontal lessons and classroom work

Modalità di verifica dell'apprendimento
The final exam is a written test where students have to write the abstract of a scientific article.

Testi di riferimento
The material will be provided by teachers.

Altre informazioni
By the end of the course, students will be able to write abstracts of scientific articles

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	2	L-LIN/12

Stampa del 06/05/2025

English Language [12041C2]

Offerta didattica a.a. 2024/2025

Docenti: ROBERTA ARONICA

Periodo: Ciclo Annuale Unico

Obiettivi formativi
The course reinforces level C1 general English and starts the study of the scientific terminology focusing on medical presentations.

Prerequisiti
NONE

Contenuti del corso
The course focuses on level C1 general English and on the ability to talk about medical topics.

Metodi didattici
The whole course is taught through frontal lessons. Students will also work in groups on projects and presentations.

Modalità di verifica dell'apprendimento
The final exam is a level C1 written test

Testi di riferimento
The material will be provided by teachers.

Altre informazioni
By the end of the course, students will be able to talk about medical topics with the proper technical scientific language.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	4	L-LIN/12

Stampa del 06/05/2025

FUNDAMENTALS OF BASIC SCIENCE (6) [1204305]

Offerta didattica a.a. 2024/2025

Docenti: GIORGIO MINOTTI, FIORELLA GURRIERI

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
The course brings together two main branches: Pharmacology and Medical Genetics, strictly connected within the modern concept of precision medicine. In essence, the main objective is to start from the foundations of the two fields and move towards the knowledge of the genetic load in human diseases, the potential for tailored treatments and the opportunities for cause-related rather than disease-related therapies.

Prerequisiti
The students are requested to have acquired key competences in human genetics (monogenic and multifactorial diseases, cytogenetics, population genetics, methodologies for genetic analysis) according to the program in FBS1, and chemistry, biochemistry, physiology, pathophysiology.

Contenuti del corso
Medical Genetics:

• Variant classification according to the American College of Medical Genetics
• The genetic basis of neurodevelopmental disorders
• Epigenetic signatures
• The genetic basis of neuronal diseases
• Oncogenetics
• The genetic basis of endocrine diseases
• The genetic basis of autoinflammatory diseases
• Cardiogenetics
• Precision Medicine
• Complex diseases and polygenic risk score

General Pharmacology:
• Clinically oriented principles of pharmacokinetics, pharmacodynamics and drug metabolism
• Principles of drug development and clinical trials
• Principles of mutagenesis and teratogenesis
• Genetically-oriented new methodologies in drug development and clinical trials
• Assessing efficacy and safety

Metodi didattici
The teaching methodology will consist of a combination of traditional platform lessons, class seminars, interactive discussion on selected topics or on topics of interest for the students, practical activities both in the clinics and in the laboratory. The students will be stimulated to select an article from the medical literature and to briefly expose its contents to the whole class. Because the two disciplines of this Course share interests in preclinical and clinical fields, multidisciplinary seminars will be organized and relevant topics will be jointly discussed.

Modalità di verifica dell'apprendimento
At the end of the course the final exam will take place, in agreement with sessions scheduled in the academic calendar. The knowledge gained and the ability to apply it will be verified by a written test for pharmacology. The written text will include 10 multiple choice questions formulated to assess student capability to move around different topics. For Medical Genetics 16 multiple choice questions (2 points each for correct answers) with penality (-1 points each for wrong answered questions).
In case of irregularities during the written test (Genetics), the teachers can request an oral exam at their discretion.

Marks of the two modules will be averaged to give a final mark, in proportion to the CFU of this course.

Testi di riferimento
Medical Genetics:

Medical Genetics - Jorde Carey Bamshad, 6th edition, Elsevier
Medical Genetics - G. Bradley Schaefer, James N. Thompson Jr. Mc Graw Hill
Clinical cases will be presented and discussed throughout the course. Attendance of the genetic outpatients clinic is strongly recommended as an “hands on” activity

General Pharmacology:
Bibliography will be suggested ad hoc during classes

Altre informazioni

Medical Genetics. Students must achieve an appropriate perception and knowledge of the genetic background of human diseases. They will know the characteristics of the main genetic conditions. They have to gain knowledge about clinical and molecular methods necessary to reach a correct genetic diagnosis.
They will understand the main principles of modern methodologies for gene-hunting and for disease modelling and precision medicine. They will be exposed to the principles of the ‘Omics science’
Pharmacology Students will be introduced to the principles and methodologies of drug development, going from identification of druggable diseases to the main characteristic a potential candidate should have in terms of pharmacokinetics, pharmacodynamics, efficacy and safety. Students should therefore be acquainted with genetic drivers and/or perturbers of efficacy and/or safety and the role that such factors may have in defining pharmacological opportunities in investigational and real life settings.
For both Modules students will be exposed to bioethical issues inherent to the preclinical genetic diagnosis, the genetic identity of the patient, the compassionate use of drugs, the management of off target results in genomic analysis.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	3	MED/03, BIO/14

Stampa del 06/05/2025

FUNDAMENTALS OF MEDICINE (4) [1204306]

Offerta didattica a.a. 2024/2025

Docenti: FRANCESCO DE MICCO

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
The course aims to provide students with the knowledge and skills (a) to understand the main deontological issues of the medical profession (general duties of the medical doctor, relations with the citizen, relations between patient and physician, relations with other healthcare workers) and (b) to develop the communication skills needed to conduct an effective medical interview, manage emotions and support effective cross-cultural communication

Prerequisiti
According to the Study Manifesto, there is no propaedeuticity for this Integrated Course.

Contenuti del corso
Medical Ethics
- Deontology and Code of Ethics
- The medical profession
- The Professional Order
- Freedom and independence of the profession
- Professional secrecy and the protection of confidentiality
- Emergency services
- Resource Utilization
- Patient safety and clinical risk management
- Relations with the citizen in specific care contexts
- Respect for the dignity of the patient in a relationship of trust
- Informing the patient and obtaining consent to the medical act
- Issues at the beginning of human life
- Issues at the end of human life
- Experimentation
- Intra- and inter-professional relations
- Relations with public and private healthcare facilities
- Empowering and aesthetic medicine
- Informatisation and healthcare innovation

Communication Skills
- Basic communication concepts
- Emotions and empathy: Recognizing and understanding your own and others' emotions
- Visual and verbal codes
- Non-verbal communication
- Persuasive communication
- Groups and group communication
- Obstacles to efficient communication
- Communication in conflict management: Giving and receiving criticism
- Communication and health promotion
- Bias in medicine and how to overcome it: Different cultures and social norms. Can empathy help us overcome bias?
- Role-playing

Metodi didattici
Medical Ethics
- Lectures, case analyses, reflective learning

Communication Skills
- Supervised lectures and group work, academic lectures, tutorials, role-plays.

Modalità di verifica dell'apprendimento

Medical Ethics
- Written examination aimed at testing the actual degree of learning, the ability to critically rework the acquired knowledge and present it in a comprehensible manner, the ability to identify the elements characterising the course topics.
- 16 multiple-choice questions
- Each correct answer counting for 2 points; either incorrect answer or answer not given count for 0 points
- The minimum grade to pass written exam is 18 (9 correct multiple-choice questions); the maximum grade is 32 (16 correct multiple-choice questions), which corresponds to 30 cum laude.

Communication Skills
Written exam with short open-ended questions and multiple-choice questions (4 open-ended questions and 13 multiple-choice questions). Each open-ended question is worth up to 3 points (maximum obtainable: 12 points), and each multiple-choice question is worth 1 point (maximum obtainable: 13 points). The maximum score obtainable from the written exam alone is 25. On the first day of class, the dates for the role-playing exercises will be scheduled, and participation is necessary to achieve a score higher than 25. Students will be divided into small groups and will participate in a simulation on the scheduled day, which will be worth up to 6 points. The role-playing score will be individual, not group-based. The minimum score to pass the exam is 18, and the maximum score is 31 (30 with honors), achievable through 25 points from the written exam + 6 points from role-playing

The final examination mark is expressed in thirtieths (minimum mark 18/30, maximum attainable mark 30/30 with distinction), and is the result of the weighted average of the marks obtained for each module.

Testi di riferimento
Medical Ethics
- Slides and material produced by the lecturer will be uploaded onto the e-learning platform.
- Laura Palazzani. Bioethics and Biolaw: theories and questions. G. Giappichelli Editore, Torino, 2018

Communication Skills:
- The teaching material (downloadable from the e-learning platform) will be provided approximately two days before each class.
- The Handbook of Communication Skills. Edited by Owen Hargie (2018). Routledge

Altre informazioni
Medical Ethics
- Knowledge and Understanding
To know and understand the deontological principles that characterise the professional autonomy and responsibility of the physician.
- Applied Knowledge and Understanding
Deciding, planning and implementing effective and safe care interventions that comply with quality standards and are based on scientific evidence, respecting legal and ethical responsibilities, with a personalised and integrated approach that considers individual and community needs, thus improving the health status and general well-being of the people involved.
- Autonomy of Judgment
Use critical thinking to understand the phenomena that characterise the reality of care and deontological reflection.
- Communication Skills
Presenting and discussing one's decisions with colleagues and other professionals, even in situations of moral distress, in order to ensure transparency, accountability and enrich one's point of view, contributing to a collaborative and understanding working environment.
- Learning Ability
Deal autonomously and critically with the study of deontology for the acquisition of new knowledge and understanding of new phenomena.

Clinical Communication Skills
- -Knowledge and Understanding:
Understand and comprehend the main theories and models of communication, as well as the fundamental elements of verbal and non-verbal communication. Grasp the processes involved in interpersonal communication, including active listening, feedback, and emotion management. Understand the main barriers to effective communication, such as biases and cultural differences.
- Applied Knowledge and Understanding:
Develop the ability to critically analyze verbal and non-verbal messages to understand the underlying meaning and intentions of the interlocutor. Recognize and interpret the emotions expressed through verbal and non-verbal communication. Develop the ability to recognize and respect cultural differences in communication and make autonomous decisions that take these differences into account to avoid misunderstandings and promote inclusion.
- Autonomy of Judgment:
Be able to assess the effectiveness of one's own communication and that of others, identifying strengths and areas for improvement. Develop the ability to critically analyze and evaluate received messages, distinguishing between relevant and irrelevant information, and identifying potential biases or manipulations. Learn to assess conflict situations and independently decide the best strategies to resolve them constructively and peacefully, promoting

effective and respectful communication.
- Communication Skills:
Demonstrate the ability to respond appropriately to various communicative situations by adapting one's communication style to the context and the interlocutor.
- Learning Ability:
Learn how to modify one's communication style in response to different interlocutors and environments, developing communication flexibility. Learn to receive and use constructive feedback to improve one's communication skills. Demonstrate the ability to adapt to new communicative situations, applying the skills acquired in different contexts.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	7	M-PSI/05, MED/43, MED/43, MED/43

Stampa del 06/05/2025

General Pathology and Pathophysiology & Pharmacology [1204214]

Offerta didattica a.a. 2024/2025

Docenti: MARIO CIOCE

Periodo: Secondo Ciclo Semestrale

Obiettivi formativi
The objective of this integrated course is to gain an understanding of the human body as a complex ecosystem, encompassing both cellular and tissue levels. This will be achieved by examining the significance of homeostatic mechanisms and their disruption in disease states from a molecular to a systemic perspective. This program will systematically expose the molecular pathogenesis of the most common classes of disease (genetic basis of diseases; adaptive cellular responses to stress and degeneration; inflammation; immunity; hemostasis; cancer). The learner will gain a clear understanding of the "laboratory to bedside" approach and its broad potential. The student will gain an understanding of the physiological and pathological basis of blood diseases, coagulation disorders, renal and liver failure, neoplastic and cardiovascular diseases, and their diagnosis. Additionally, the course aims to provide general and specific pharmacology knowledge that should help the student develop the ability to apply pharmacology principles to medical practice according to evidence-based medicine.

Prerequisiti
An intermediate level knowledge of general chemistry, organic chemistry and biochemistry, together with knowledge of anatomy, histology, physiology, microbiology, cell biology and basic immunology is required

Contenuti del corso
General Pathology: Knowledge of the relevance of homeostatic mechanisms and their perturbation in disease states, leading to the three fundamental pathogenic mechanisms: degenerative, reactive-inflammation and neoplastic. From the definition of health, its homeostatic balance and mechanisms, to disease development, progression and healing. Topics will be: Basic mechanisms of genetic and congenital disorders. Cellular Responses to Stress and Toxic Insults: Adaptation, Injury, and Death; Acute and Chronic Inflammation; general mechanism of Infectious Diseases; Tissue Renewal, Repair, and Regeneration. Hemodynamic Disorders, Thromboembolic Disease, and Shock. Atherosclerosis and Metabolic Diseases. Environmental and Nutritional Diseases. Diseases of the Immune System. Stem cell organization, aging and senescence. From stem cells to carcinogenesis. Genetic and Epigenetic make-up of tumor cells. Molecular Pathways of cancer. Tumor microenvironment and tumor development: cellular signaling and immunological determinants. Hallmarks of Cancer. Future Oncology: from bench to bedside.
General Pathophysiology: Relevance of altered response in determining disease susceptibility, with focus on single system/organ dysfunction. Topics will be homeostatic control of electrolyte balance in disease, Pathophysiology of acid-base balance; Pathophysiology of respiratory and cardiovascular system; Renal and hepatic diseases; Pathophysiology of the metabolism of calcium and phosphates. Disease of thyroid and parathyroid. Diseases of the pancreas. Diseases of breast, ovary, endometrium, cervix. Hematological disorders. Metabolic disorders and metabolic syndrome. Nutritional diseases.
Pharmacology: The course of Pharmacology aims at making the student acquainted with general and specific knowledge of drug development, pharmacokinetics, pharmacodynamics, as well as with genetic drivers and/or perturbers of efficacy and/or safety and the role that such factors may have in defining pharmacological opportunities in investigational and real-life settings. The course offers a program of topics selected of general pharmacology: clinically oriented principles of pharmacokinetics, pharmacodynamics and drug metabolism; principles of drug development and clinical trials; principles of mutagenesis and teratogenesis; genetically-oriented new methodologies in drug development and clinical trials; efficacy and safety of drugs; bioequivalent and biosimilar drugs.

Metodi didattici
The course includes lectures and monographic courses and collaboration between different workshops. Discussions and specific forums/topics will be set up from time to time to discuss scientific articles or relevant topics agreed with the students and flowers from formal teaching activities. External speakers may be invited to lecture on specific topics. Speakers will be chosen and invited as subject matter experts with perspectives also from a historical and philosophical perspective.

Modalità di verifica dell'apprendimento
Final examination: The assessment consists of a written examination in General Pathology, Pathophysiology and

Pharmacology, followed by an oral interview (for General Pathology and Pathophysiology). Details:
For Pharmacology, the test will consist of 16 multiple-choice questions formulated to assess the student's ability to move between different topics.
For General Pathology and Pathophysiology, the written test will consist of 16 multiple-choice questions and will be followed by an oral examination of at least 4 questions, including the discussion of an article published in a journal with JCR IF chosen by the student. The oral examination will therefore begin with a discussion of the chosen article. The score obtained in the written examination will be the starting score for the oral examination.
The evaluation (marks expressed as 30/30, w/wo honors) will take into account the following points
- each correct question is worth 2 points
- each wrong or unanswered question is worth 0 points
- to pass the exam, the student must achieve a score of at least 18/30.
- honors can only be awarded if the student answers all 16 questions correctly.

CRITERIA FOR MEASURING LEARNING AND AWARDING THE FINAL GRADE
The integrated course grades will be averaged to obtain a final grade in proportion to the CFUs of each course.

Testi di riferimento
General Pathology and Pathophysiology: Robbins & Cotran: pathologic basis of disease, 10th edition (Textbook). The slides will be available at the end of each conceptual session together with the selected articles and literature review useful for teaching purposes.
Pharmacology: Bertram G. Katzung and Anthony J. Trevor. Basic and Clinical Pharmacology 15th edition. Lange Publishing Co.; Goodman and Gilman's The Pharmacological Basis of Therapeutics 14th edition. McGraw Hill Publishing Co. The slides used in academic lectures uploaded on to the e-learning platform

Altre informazioni
D1- KNOWLEDGE AND ABILITY TO UNDERSTAND
The student must demonstrate knowledge of the main mechanisms responsible for the development of diseases in humans: the causes of cell/tissue damage and death; fundamental pathogenetic mechanisms associated with immunity, inflammation and carcinogenesis; heredity of genetic diseases. These skills will be assessed through the final examination. In addition, the student should be familiar with the main concepts of human pharmacology, including PK and PK/PD, and with the variability in drug response and the main effects of drug-drug interactions.
D2- ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING
The student should be able to use the principles of General Pathology and Pharmacology to understand pathogenetic mechanisms. The student should have acquired knowledge enabling him/her to recognize the mechanisms responsible for the development of a disease and to identify specific pathological conditions with applicative possibilities in the prevention, diagnosis and therapy of diseases. The ability to use these tools will be an integral part of the student's future professional life, in health care and/or experimental research. These skills will be assessed through the final examination and the written exam.
D3-AUTONOMY OF JUDGEMENT
The student must demonstrate that he/she has acquired the ability to critically evaluate and connect the topics tested. Capacity for constructive synthesis, ability to contextualize and connect different scientific evidence in a dynamic and changing system such as that of Pathology Générale and modern Pharmacology. These skills will be tested both by means of the written test and through application-oriented oral questions. These skills will be assessed through the final examination and during interdisciplinary discussions.
D4-COMMUNICATION SKILLS
The student should be able to describe the principles and concepts learnt during the course by expressing himself/herself clearly, in appropriate terms and using appropriate examples. This ability will be assessed during the oral interview.
D5-LEARNING SKILLS
The student must be aware of his or her own scientific growth in a critical and autonomous manner, be able to make correct use of the study material provided and be able to delve into it independently. These skills, as far as possible, will be stimulated by the lecturer proposing during the lessons.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	9	BIO/14, MED/04, MED/04, MED/04

Stampa del 06/05/2025

Immunologia e Genetica [1204211]

Offerta didattica a.a. 2024/2025

Docenti: FIORELLA GURRIERI

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
The principal aims of this integrated course will be to highlight the close relationship between genetic and molecular bases and the immune response. Considering the increasing importance of genetics and molecular biology in understanding the pathogenesis of diseases, as well as the diagnostic procedures, appropriate knowledges and skills for laboratory and multimedia tools applicable to medical practice will be acquired. This module is designed to develop an understanding of how the body recognizes and responds to foreign agents, infectious organisms and malignancy as well as to self. The module gives a comprehensive account of the individual components of the immune system and how they interact, and the discussion of mechanisms involved in the aetiology and treatment of disease states. Malfunctioning of the immune system will be introduced with examples of some of the main disease states in autoimmunity, allergies and inherited and acquired immunodeficiency. Genetic diseases related to variants involved in the immune response will be covered in addition to other diseases not strictly related to immunity.

Prerequisiti
Propedeutics of Medicine is propedeutic for Immunology and Genetics

Contenuti del corso
Medical Genetics Programme:
-Variant classification according to the American College of Medical Genetics (CL)
-The genetic basis of neurodevelopmental disorders (CL)
-Epigenetic signatures (CL)
-The genetic basis of neuronal diseases (CL)
-Oncogenetics (FG)
-Cardiogenetics (FG)
-The genetic basis of autoinflammatory diseases (FG)
-HLA and autoimmune diseases (FG)
-Precision Medicine (FG)
-Complex diseases and polygenic risk score (FG)

Basic Immunology Programme
Introduction to the module; Why do we need an immune system? What is it for (FDA)
Overview of the cells of the immune system (FDA)
Origin and development of the immune system (FDA)
Innate immune response: molecules and signalling (AI)
Innate immune response: cell types (AI)
Adaptive immune response: molecules and signalling (FDA)
Adaptive immune response: T cells (FDA)
Adaptive immune response: B cells (AI)
MHC/HLA in health and disease (FDA)
Inflammation: acute and chronic (FDA)
Autoimmunity: central and peripheral tolerance (FDA)
Transplantation and immune suppression (AI).
Pre-recorded lectures – tutorial – revisions (12hrs): Immunization and vaccines (FDA); Immunodeficiencies (FDA); Advances in Immunology (FDA); Advances in Immunology (AI); Tutorials and revisions (FDA + AI)

Molecular Biology Programme
Lessons will be focused on the innovative molecular biology methods that are used in clinical laboratory. The course will be condensed into two full days and will include combinations of lectures and lab practice. Students will be performing basic molecular biology experiments, depending on students' progress such as SDS PAGE, Plasmid purification, Restriction enzyme digest, agarose gel and PCR.

Metodi didattici
Lectures, practical sessions in laboratory, discussion of clinical cases

Modalità di verifica dell'apprendimento
The examination of the course contents will be a separate written test of the 3 subjects containing multiple choice questions (MCQs), short essays and exercises. The written test will be composed as follows:

MEDICAL GENETICS: 16 multiple choice questions (2 points each for correct answers) with penality (-1 points each for wrong answered questions).
In case of irregularities during the written test, the teachers can request an oral exam at their discretion

BASIC IMMUNOLOGY: The test is based on 28 multiple-choice (MC) and 5 Single Answer (SA)questions and will last 60mins. Each MCQ question has a single best answer. Each answer to the SAQ can be attempted twice.

MOLECULAR BIOLOGY: The exam will be organized by 18 MCQs and one short essay and you will have 1 hour and half to complete the exam. Each question will be scored 1,5 if it is correct, 0 if it is not answered and -0.25 if incorrect. The short essay will be scored ranging from 0 to 4 marks according to the following marking categories: knowledge and understanding: marks from 0 to 2, apply and connect knowledge: marks from 0 to 1 And communication skills and terminology: marks from 0 to 1.

Testi di riferimento
Textbooks, slides, clinical cases, publications will be provided to students.

GENETICS
Suggested textbooks:
Medical Genetics - Jorde Carey Bamshad, 6th edition, Elsevier
Medical Genetics - G. Bradley Schaefer, James N. Thompson Jr. Mc Graw Hill
Other materials: scientific articles and slides uploaded on e-learning.

BASIC IMMUNOLOGY:
Janeway's Immunobiology by Kenneth Murphy and Casey Weaver
Basic Immunology: Functions and Disorders of the Immune System Paperback by Abbas MBBS, Abul K. (Author), Lichtman MD PhD, Andrew H. H. (Author), Pillai MBBS PhD, Shiv (Author). Immunology Made Ridiculously Simple Paperback – 1 May 2009

MOLECULAR BIOLOGY
Molecular Biology 3rd Edition -Authors: David Clark Nanette Pazdernik Michelle McGehee
Molecular Biology Techniques, 4th Edition, A Classroom Laboratory Manual - Authors: Sue Carson Heather Miller Melissa Srougi D. Scott Witherow
Molecular Cell Biology: (8th Revised edition) - Authors: Harvey Lodish, Arnold Berk, Chris A. Kaiser, Angelika Amon, Hidde Ploegh, Anthony Bretscher, Monty Krieger, Kelsey C. Martin

Altre informazioni
The integrated course Immunology and Genetics encompasses a wide range of knowledge from the study of systematic genetic and molecular bases of immunology to the understanding of human disease mainly related to immune dysfunction. Integrated approach will be strongly engaged. The course comprises Medical Genetics, Molecular Biology and Basic Immunology. This module is designed to develop an understanding of how the body recognizes and responds to foreign agents, infectious organisms and malignancy as well as to self. The module gives a comprehensive account of the individual components of the immune system and how they interact, and discusses the mechanisms involved in the aetiology and treatment of disease states. Malfunctioning of the immune system will be introduced with examples of some of the main disease states in autoimmunity, allergies and inherited and acquired immunodeficiency. Students have to achieve an adequate knowledge of the genetic/molecular bases of mechanisms involved in immunology. Students will also learn the most updated innovative diagnostic tests, both molecular and non molecular-based techniques. Finally, they have to learn the molecular and cellular bases of immune response, connecting them with the structure of lymphoid organs and the biological and pathogenic aspects of different infections. The principal aims of the course will be highlight the close relation between molecular and cellular bases of diseases and immune response. Students will also learn about genetic diseases not directly related to the immune response.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale	Medicine and Surgery (2019)	comune	6	MED/03, MED/04,

Stampa del 06/05/2025

Initial Skills Verification – Chemistry [1204VER02]

Offerta didattica a.a. 2024/2025

Docenti:

Periodo: Primo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	0	BIO/10

Stampa del 06/05/2025

Initial Skills Verification – Mathematics [1204VER04]

Offerta didattica a.a. 2024/2025

Docenti:

Periodo: Primo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	0	FIS/07

Stampa del 06/05/2025

Initial Skills Verification – Physics [1204VER03]

Offerta didattica a.a. 2024/2025

Docenti:

Periodo: Ciclo Annuale Unico

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	0	FIS/07

Stampa del 06/05/2025

ITALIAN LANGUAGE [1204204]

Offerta didattica a.a. 2024/2025

Docenti: ROBERTA ARONICA

Periodo: Ciclo Annuale Unico

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	2	L-FIL-LET/12

Stampa del 06/05/2025

Italian Language [12041C1]

Offerta didattica a.a. 2024/2025

Docenti:

Periodo: Ciclo Annuale Unico

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	4	L-FIL-LET/12

Stampa del 06/05/2025

Medical Humanities (1) [1204115]

Offerta didattica a.a. 2024/2025

Docenti: GIAMPAOLO GHILARDI

Periodo: Primo Ciclo Semestrale

Obiettivi formativi
According to E. Pellegrino, one of the most famous bio-ethicists, fundamentally medicine is moral. It is neither a natural nor a science although it often depends upon both for its technical and communal progress. Medicine especially as clinical practise is moral because the defining element of its practise is the patient-physician relationship, and that relationship is profoundly principled and often based upon ethical rules and duties. The integrated course “Medical Humanities 1” aims to provide students with some essential tools from the humanities (Anthropology, Ethics, and Humanities) necessary to understand the nature of the patient-physician relationship, keeping in mind what William Osler, a pioneer of modern Medicine said: “The good physician treats the disease; the great physician treats the patient who has the disease.” In order to be able to reach this goal in their profession, medical students need to know themselves, as well as their future patients, as human beings, in the context of histories, cultures and values.
The course therefore aims to provide a clear understanding of the rich and large set of values, virtues, and moral characteristics connected with medical practice.

Prerequisiti
None

Contenuti del corso
Introduction to health humanities: Proff. Campanozzi, Di Stefano.
In the Medical Humanities course, we will focus both on philosophical aesthetics and moral philosophy, analyzing several classical readings from Western and non-Western cultures. Moreover, we will face a number of issues arising from current multidisciplinary research in philosophy of beauty and the idea of good. Topics of the course will be:
(Di Stefano) defining medical humanities; philosophy, aesthetics and medicine; the arts and medicine; the perception of beauty; the evolutionary origins of the appreciation of beauty and art; neuro-aesthetics of music and music therapy; (Campanozzi) ethics of the work well done; diagnosis as an anthropological matter; trust in medicine and institution; the human error and sharing; friendship, wisdom and the meaning of illness.

Anthropology: Prof. Ghilardi
Introduction/general overview. What anthropology is. On Truth. Anthropology and Technologies. Homo faber/homo sapiens. Anthropology and industry 4.0. Anthropology and Medicine. Transhumanism. Posthumanism. Humanism and humanities. Leonardo and humanism. Recap of the programme.

Ethics: Prof. Ghilardi
Introduction/general overview. What ethics is. Why ethics in medicine. Ethical schools. Free will. Libet’s experiments on free will. The trolley dilemma. Utilitarianism and consequentialism. Consciousness. Agency: what does it mean to be a moral agent. Ethics and Rhetoric. The good words. Ethics and communication between doctor and patient. The notion of personhood. Virtues. Epistemic virtues. Happiness and its value in professionalism. Professional virtues. Virtues for science. The good doctor. Precision Medicine or Personalized Medicine. Recap of the programme.

Metodi didattici
Besides the frontal lecture it will be possible to have seminars and team work. The teaching methods promote classroom engagement and cooperation. Both the interactive lectures and group activities will entail the active involvement of students.

Modalità di verifica dell'apprendimento
The final exam will take place at the end of the course, in the sessions scheduled by the academic calendar. The exam will be written made of multiple-choice questions. The questions will test the knowledge related to the Aims and Objectives of the course, described above, and ability to apply it.

Testi di riferimento
Introduction to the health Humanities:

• D. E. Cooper (ed), Aesthetics: The Classic Readings, Wiley Blackwell, 2019
• Aristotle, The Nicomachean Ethics, Leslesy Brown (ed), Translated by D. Ross, Oxford University Press, 2009.
• L. Sanders. Every Patient Tells a Story: Medical Mysteries and the Art of Diagnosis, Broadway Books, 2009
• B. Lawn, The Lost Art of Healing: Practicing Compassion in Medicine, Ballantine Books, 1999.

Anthropology:
• James. A. Marcum, The virtuous physician, the role of virtue in Medicine, Springer, 2012
• G. Ghilardi, “Analogia Sensuum: The knowing body”, in: N. Di Stefano, V. Tambone (eds.), About the living body, Nova science, New York 2016, pp. 15-31
• G. Ghilardi, L. Campanozzi, V. Tambone, “Humanities: Methods for Medical Training”, in Journal of Medical Diagnostic Methods, vol. 5, Issue 1, 2016

Ethics:
• J. Seifert, The philosophical diseases of medicine and their cure, philosophy and ethics of medicine, Springer, 2004
• V. Tambone, G. Ghilardi, “An ethical evaluation methodology for clinical cases”, Persona y Bioética, 20 (1), 2016, pp. 48-61
• G. Ghilardi, “Epistemological remarks on Libet’s experiments on free will”, Rivista Internazionale di Filosofia e Psicologia, 6 (1), 2015, pp. 110-119
• V. Tambone, G. Ghilardi, Philosophy and Deontology of Medical Practice, Ethics of the work well done in bio-medical sciences, SEU, Roma 2020

Altre informazioni
- Knowledge and understanding of what it means to be a human being, what are human values and virtues.
- Applying knowledge and understanding. The student will be able to develop ethical reasoning in biomedical sciences.
- Making judgments. The student will be able to evaluate the ethical issues connected with the practice of Medicine.
- Communication skills. The student will develop the ability not just to convey messages to the patient and/or her families, but also to communicate the commitment to her condition.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	5	M-FIL/03, M-FIL/03, MED/43

Stampa del 06/05/2025

Medical Humanities (2) [1204116]

Offerta didattica a.a. 2024/2025

Docenti: LUCA BORGHI

Periodo: Ciclo Annuale Unico

Obiettivi formativi
The integrated course “Medical Humanities 2” aims to provide students with notions and essential tools from some medical humanities (history of medicine and clinical communication skills) which are, today, critical for the education of professionals who cannot rely simply on a hyper-specialized and reductionist approach to biomedical knowledge.

In the Clinical Communication Skills (CCS) module, students will learn the necessary foundations for developing the communication skills relevant to the medical interview, which they will continue to build upon during the six years of study. They will gain an understanding of the importance of effective and empathic communication between the doctor and the patient, considering that this significantly improves accuracy, efficiency, health outcomes for patients, and satisfaction for both the doctor and the patient. Good emotional awareness, active listening, empathy, and in-depth knowledge of emotions will be encouraged and explored through lessons and group discussions.

In the History of Medicine (HOM) section, students will be helped to grasp how much the "human factor" has affected the evolution of medicine and healthcare, especially over the last two centuries.

Prerequisiti
None.

Contenuti del corso
Clinical Communication Skills
1. What emotions are. Primary and secondary emotions, neural bases. Main theories of emotions. Classical/localizationist perspective and constructivist theory of emotions.
2. Recognizing one's own and others' emotions, how to measure emotions, managing emotions.
3. Emotional intelligence.
4. Empathy. Neural bases, tests to measure empathy. Perception-Action Model (PAM), mirror neurons in empathy, theories.
5. What happens when empathy is lacking. Dehumanization. Milgram and Zimbardo experiments.
6. Persuasive communication.
7. Stereotypes and prejudices, in everyday life and in medicine. Biases in medicine. Cross-cultural communication.
8. Different cultures and social norms. Social groups. Communication within groups.
9. Non-verbal communication.
10. Learning to give and receive criticism. Communication in conflict management.

History of Medicine
(Where not otherwise stated the lectures will be given by Luca Borghi)
1. Introduction
2. Ancient medicine. Hippocrates – Part 1
3. Ancient medicine. Hippocrates – Part 2
4. Presentation of intermediate assignments
5. Galen. The origin of hospitals.
6. Medieval medicine
7. Modern medicine (Vesalius, Harvey and Morgagni)
8. Edward Jenner and smallpox
9. René Laennec and tuberculosis – Part 1
10. René Laennec and tuberculosis – Part 2
11. John Snow and cholera – Part 1
12. John Snow and cholera – Part 2
13. Semmelweis, puerperal fever and the importance of numbers – Part 1
14. Semmelweis, puerperal fever and the importance of numbers – Part 2
15. Luis Pasteur and Robert Koch: the birth of Microbiology – Part 1
16. Luis Pasteur and Robert Koch: the birth of Microbiology – Part 2
17. What is the point of a Physician? – Part 1 (David Leslie)
18. What is the point of a Physician? – Part 2 (David Leslie)

19. On Normality - Part 1 (David Leslie)
20. On Normality - Part 2 (David Leslie)
21. A Brief History of Death – Part 1 (David Leslie)
22. A Brief History of Death – Part 2 (David Leslie)
23. The golden age of Surgery - Part 1
24. The golden age of Surgery - Part 2
25. Women in medicine. Elizabeth Blackwell – Part 1
26. Women in medicine. Elizabeth Blackwell – Part 2
27. William Osler and the take-off of American Medicine – Part 1
28. William Osler and the take-off of American Medicine – Part 2
29. Charles West and the invention of paediatrics – Part 1
30. Charles West and the invention of paediatrics – Part 2
31. Brain and Mind: the history of a troublesome relationship – Part 1
32. Brain and Mind: the history of a troublesome relationship – Part 2
33. History of cardiac surgery – Part 1
34. History of cardiac surgery – Part 2
35. History of malaria – Part 1
36. History of malaria – Part 2
37. Charles West, the dreamer who invented pediatrics (Part 1)
38. Charles West, the dreamer who invented pediatrics (Part 2)
39. When Disease Changes History by Striking People (Sal Mangione)
40. When Disease Changes History by Striking Leaders (Sal Mangione)
41. Groupthink, Collective Evil and the Holocaust: Implications for Health Care – Part I (Sal Mangione)
42. Groupthink, Collective Evil and the Holocaust: Implications for Health Care – Part I (Sal Mangione)
43. Virchow at 200 and Lown at 100: Physicians as Activists (Sal Mangione)
44. The (Lost) Archetypes of Medicine (Sal Mangione)
45. Leonardo at 500: The Anatomist and the Creator – Part I (Sal Mangione)
46. Leonardo at 500: The Anatomist and the Creator – Part II (Sal Mangione)
47. The Shroud of Turin and the Scientific Evidence – Part I (Sal Mangione)
48. The Shroud of Turin and the Scientific Evidence – Part II (Sal Mangione)
49. Deeds and Misdeeds of Biomedical Experimentation on Human Beings – Part 1
50. Deeds and Misdeeds of Biomedical Experimentation on Human Beings – Part 2

Metodi didattici
Lectures with discussion, and supervised individual work. The supervised individual works will allow students to benefit from blended learning methodologies such as “flipped classroom” (video presentation to their colleagues of the results from personal readings).

Modalità di verifica dell'apprendimento
The learning assessment of the course will take place through successive steps and the evaluation of both oral talks and practical assignments. CCS: The exam will consist of a written test with multiple-choice questions, true/false questions, and short open-ended questions. A discussion of the written test is mandatory for scores below 25, but it is optional for all the others. HoM: the video presentation (5’) of the personal reading is due by the end of Christmas Holidays. The written reflective essay (about 500 words) about professor Mangione’s lectures is due by the end of May. The final oral exam (about 15’) about the general program (textbook plus lectures by Professors Leslie and Borghi) can be taken starting from the Summer session.

Testi di riferimento
History of Medicine

- Luca Borghi, Sense of Humors. The Human Factor in the History of Medicine (Amazon KDP 2022)
- a book related to the topic of student's choice

Clinical Communication skills
- Feldman Barret Lisa. How Emotions are made: The secret life of the Brain. Harper Paperbacks

Reading materials and videos will be provided during the course. Articles and videos are an integral part of the course and of the final examination.

Altre informazioni
Knowledge and understanding of the fundamental stages in the evolution of medical and healthcare theory and practice, with special reference to the last two centuries.
Ability of making judgments through the choice of some in-depth paths, both as individuals and in small groups: reading and analysis of a book of personal choice (first term), creation or expansion of an English Wikipedia entry (second term). Further, students will be invited to peer-evaluate each other individually and as groups.
In addition to the lectures specifically dedicated to the clinical communication skills, the history of medicine course will allow students to further improve their communication skills both through a short video presentation of their

personal reading, and through group work aimed at writing and publishing a new page on English Wikipedia.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	5	MED/02, M-PSI/05

Stampa del 06/05/2025

Microbiology [1204217]

Offerta didattica a.a. 2024/2025

Docenti: GIOVANNI GHERARDI

Periodo: Secondo Ciclo Semestrale

Obiettivi formativi
Microbiology is a course for medical students based on clinical microbiology, encompassing clinical bacteriology, mycology, virology, and parasitology, acquiring major knowledges of general concepts of microbial structure, pathogenesis, host-pathogen interactions, and laboratory-based management of infectious diseases. The principal aims of the course will be highlight the major characteristics and pathogenesis of microrganisms of medical importance causing infectious diseases in humans. Indeed, the importance of pathogens, such as bacteria, fungi, viruses and parasites, will be deeply presented and discussed in order to allow students to be able to critically resolve clinical situations and to interpret the pathogenesis of infectious diseases and the wide array of microbiology laboratory tests, including conventional and molecular microbiology and immunology. Considering the increasing importance of antimicrobial resistance as a critical global health threat, appropriate knowledges and skills for conventional and innovative diagnostic procedures applicable to medical practice will be acquired in the light of diagnostic and diagnostic stewardship programs to fight the phenomenon of antimicrobial resistance

Prerequisiti
The proper understanding of the principles of Microbiology contents requires an appropriate knowledge of basic mathematics, physics, general, inorganic and organic chemistry, cellular biology, physiology, anatomy, and biochemistry.

Contenuti del corso
Microbiology:
Bacteriology and Mycology (Prof Gherardi G) (3 ECTS)
Bacteriology. 1. Generalities on prokaryotes, bacterial cell wall. (lecture 1, 3 hrs) 2. Cell wall biosynthesis and growth curve, culture media for bacteria. (lecture 1, 3 hrs) 3. Genetics. (lecture 1, 3 hrs) 4. Bacterial pathogenesis. Exotoxin and endotoxin. (lecture 1, 3 hrs) 5. Preanalytical, analytical, and postanalytical phases in clinical bacteriology. (lecture 2, 3 hrs) 6. Antibacterial agents. (lecture 2, 3 hrs) 7. The role of clinical microbiology in the antimicrobial stewardship programs. (lecture 3, 3 hrs) 8. Bacterial of medical interest: Staphylococcus, Streptococcus, Enterococcus, Neisseria, Corynebacterium, Enterobacterales, Pseudomonas aeruginosa, Vibrio cholerae, Haemophilus influenzae, Legionella pneumophila, Bacillus and Clostridium, Mycobacterium tuberculosis, Spirochetes, Mycoplasma, Chlamydia (lecture 4, 9 hrs).
Mycology. 1. Characteristics of fungi (2 hrs). 2. Main pathogenic fungi in humans, yeasts and molds (Candida spp., Cryptococcus spp., Aspergillus spp., Dermatophytes, dimorphic fungi) (2 hrs). 3. Antifungal chemotherapy (1.5 hrs). 4. Cultural and non-cultural methods used in the diagnosis of fungal infections (1.5 hrs).
Parasitology (Prof Casulli A)
1. Basics on parasites and parasitic infectious diseases (2hrs). 2. Food-, water- and fecal/oral-borne diseases cause by Protozoa (Cryptosporidium, Giardia, Toxoplasma): classification, life cycle, pathogenesis, diagnosis, epidemiology and control (2hrs). 3. Vector-borne diseases cause by Protozoa (Leishmania, Plasmodium, Trypanosoma): classification, life cycle, pathogenesis, diagnosis, epidemiology and control (2hrs). 4. Food-, water-and fecal/oral-borne diseases cause by Helminths (Anisakidae, Echinococcus, Fasciola, Opistorchidae, Schistosoma, STH, Trichinella): classification, life cycle, pathogenesis, diagnosis, epidemiology and control (2hrs). 5. Vector-borne diseases cause by Helminths (Filaria, Onchocerca): classification, life cycle, pathogenesis, diagnosis, epidemiology and control (2hrs). 6. Global health and One health in Parasitology (2hrs).
Virology, part 1 (Prof McKnight A)
Virus structure and classification. Pathogenesis. Route of transmission. Virus oncogenesis. HIV. Respiratory virus infections
Virology, part 2 (Prof De Chiara G)
1. Acute versus persistent virus infections. 2. Antiviral therapy, main drugs available for antiviral therapy. 3. Diagnosis of viral infections: direct vs. indirect detection of infections. Molecular diagnosis of virus infections. 4. Respiratory virus infections: focus on influenza virus and epidemic viruses (SARS, MERS, Sars-Cov-2). 5. Viruses causing viral hepatitis. 6. Viruses causing recurrent infection: focus on herpesviruses 7. Cute and mucosal infections focus on papillomaviruses.

Metodi didattici
The aims of the course will be achieved by a combined approach between traditional inductive teaching method,

problem based learning (PBL) and clinical based learning (CBL), supplementary teaching activity. Different teaching activities will be combined in the same week. Each week will have specific topics and will start with an overview of each topic, through a plenary frontal teaching section. Sessions of PBL or CBL in will be taken in class, where students will discuss the problems and the clinical cases proposed in the introductive frontal section, will be proposed in the same day of traditional frontal teaching. Approximately 80% of the teaching time will be of frontal teaching (about 56-60 hrs), 20 % of PBL and CBL sessions, and supplementary teaching activity (approximately 10-14 hrs each).

Modalità di verifica dell'apprendimento

Learning evaluation criteria and methods
Final examination will take place at the end of the course, in the sections scheduled by the academic calendar. The acquisition of knowledge and the ability to apply knowledge will be verified through a written test for each subject of the course.
The written test will contain 15 MCQ and 6 OEQ for Bacteriology and Mycology, 10 MCR and 4 OEQ for Virology, and 5 MCQ and 2 OEQ for Parassitology. The test should be done in a time of 1 hr, 30 min..
After the written tests the final mark will be the weighted average mark obtained in the different subjects.
Criteria for learning assessment and final score
For the Microbiology exam each MCQ is 1 pt and each completely correct answer to OEQ is equal to 5 pts, ranging between 1 to 5 depending on the correct level of answer. The total maximum score is 90 pts. The exam will be passed when students totalise a minimum score of 45 points, corresponding to a 18/30 mark, and the other final marks will be normalized accordingly. If the students severely fail to pass the test for one of the subjects, or if they fall 2 out of 3 subjects they will need to repeat the entire exam.

Testi di riferimento

Textbook, slides, clinical cases, publications will be provided to students.

Suggested Textbooks /(TESTI DI RIFERIMENTO)
• Murray P, Rosenthal K, Pfaller M. Medical Microbiology. Ninth Edition. Elsevier. 2020.
• Goering R, Dockrell H, Zuckerman M, Chiodini P. Mims' Medical Microbiology and Immunology. Sixth Edition, Elsevier. 2018
• Fabrizio Bruschi F, Pozio E. De Carneri. Parassitologia generale e umana. XIV edizione. Casa Editrice Ambrosiana. Zanichelli. 2023
• Griffin DO, Despommier DD, Gwadz RW, Hotez PJ, Knirsch CA. Parasitic Diseases. VII Edition. Parasites Without Borders, Incorporated, 2019

Altre informazioni

Microbiology course, encompasses knowledge on the study of systematic and molecular microbiology and parasitology. The course comprises Bacteriology, Mycology, Virology and Parasitology.
Students have to achieve an adequate knowledge of the systematic study of microbiology and parasitology, acquiring the molecular bases of virus biology and pathogenesis, the organization and genetics of prokaryotic cells, the biochemical and molecular aspects underlying the pathogenesis of bacterial and mycotic infections along with their antimicrobial treatments and antimicrobial resistance mechanisms, the taxonomy, life cycle, geographic distribution, basic biology, epidemiology and pathogenesis of different classes of parasites and vectors (protozoa, nematodes, helminths, arthropods), as well as general concepts of laboratory procedures of clinical specimens for the diagnosis of infectious diseases.
The students must also achieve adequate comprehension and knowledge of treatment of microorganisms of medical importance and to gain knowledge on the general concepts of laboratory-based diagnosis of infectious diseases focusing on the most relevant and critical steps of pre-analytical, analytical and post-analytical specimens' procedures in clinical microbiology. They must learn the most updated innovative diagnostic tests, both molecular and non molecular-based techniques, for an accurate and fast identification and diagnostic testing of microorganisms.
This course is designed to develop an understanding of:
-Aetiology of infectious diseases
-Pathogenesis and most important virulence factors of microrganisms (bacteria, fungi, viruses, parasites) causing infectious diseases
-Clinical microbiology laboratory for the diagnosis of infectious diseases
-Treatment of the most important microorganism causing infections in humans and their mechanisms of resistance
-Role of microbiology in diagnostic and antimicrobial stewardship for patient care and to fight antimicrobial resistance

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.

Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	6	MED/07, MED/07, MED/07

Stampa del 06/05/2025

Physiology [1204215]

Offerta didattica a.a. 2024/2025

Docenti: MARCELLO D'AMELIO

Periodo: Ciclo Annuale Unico

Obiettivi formativi
Starting from an anatomical, biochemical, biological, and physical basis, students must achieve an adequate knowledge and understanding of the main aspects of morpho-functional organization of all organs and systems of human body including the central and peripheral nervous system and the sense organs. Students have to understand the interaction between organs and systems, also with reference to the clinical relevance of their dysfunction.

Prerequisiti
Knowledge of biophysics and cellular physiology, cellular and molecular biology and human anatomy are strongly recommended.

Contenuti del corso
First Term:

Neurotransmitters
Synaptic transmission in the nervous system
Synaptic plasticity
Cellular physiology of skeletal and smooth muscle
Spinal Cord.
Locomotion.
Brainstem and Cranial Nerves.
Breathing Control.
Cortical Structure and Function, Motor Cortices.
Peripheral Somatosensory System + Peripheral Pain.
Somatosensory Cortex + Central Pain.
The Basal Ganglia.
The Cerebellum.
The Inner Ear (The Vestibular System) + Auditory Central Nervous System.
Language + Neurophysiology of Music and Creativity.
Smell and Taste: The Chemical Senses.
Eye and Optics + Visual Processing.
Multisensory Integration, Body Representation, Neurophysiology of Tool Use.
The Control of Gaze.
Computational Motor Control.
Functional neuroimaging (EEG, MEG, fMRI…).
Project based learning.
Peripheral Autonomic Nervous System.
Central Autonomic Network.
Sleep and Vigilance.
Emotions.
Attention and Cognition (Conscious and Unconscious Mental Processes and their disorders e.g., ADHD, Neglect, Cognition Disorders e.g., Autism).
Thought and Volition (and their Disorders e.g., Schizophrenia).
Learning and Memory.
Motivational and addictive states.

Second Term:
- The cardiovascular system: Organization of the Cardiovascular System, Arteries and Veins, The Microcirculation, Cardiac Electrophysiology and the Electrocardiogram, The Heart as a Pump, Regulation of Arterial Pressure and Cardiac Output, Integrated Control of the Cardiovascular System.
- The Respiratory System: Organization of the Respiratory System; Mechanics of Ventilation; Acid-Base Physiology; Transport of Oxygen and Carbon Dioxide in the Blood; Gas Exchange in the Lungs; Ventilation and Perfusion of the Lungs; Control of Ventilation

- The Urinary System: Organization of the Urinary System; Glomerular Filtration and Renal Blood Flow; Transport of Sodium and Chloride; Transport of Urea,Glucose,Phosphate,Calcium and organic solutes; Urine Concentration and Dilution
- The Gastrointestinal System: Organization of the Gastrointestinal System; Gastric Function; Pancreatic and Salivary Glands; Intestinal Fluid and Electrolyte Movement; Nutrient Digestion and Absorption; Hepatobiliary Function
- The Endocrine System: Organization of Endocrine Control; Endocrine Regulation of Growth and Body Mass; The Thyroid Gland; The Adrenal Gland; The Endocrine Pancreas; The Parathyroid Glands and Vitamin D; The Reproductive System: Sexual Differentiation; The Male Reproductive System; The Female Reproductive System; Fertilization, Pregnancy and Lactation

Metodi didattici
The aims of the course will be achieved by a combined approach between traditional inductive teaching method, problem based learning and interactive learning. Problem Based learning and Interactive learning, consisting of tests or open-ended problems to consolidate the learned topics.

Modalità di verifica dell'apprendimento
The ability to apply the knowledge and understanding of the main aspects of morpho-functional organization of the nervous system and the sense organs, reworking them in a reasoned manner is assessed. Students are also required to graphically represent models and interactions between physiological parameters and explain interactions between different organs and systems, with reference to the clinical relevance of their disfunction. Emphasis is placed on the students' communication skills and their ability to critically reformulate the learnt concepts.

The acquisition of knowledge and skills will be verified through a final exam taking place at the end of the term, in the sessions foreseen by the academic calendar.

First Term:

The exam consists of a written test a non-compulsory oral exam.
The written test is organized in two consecutive steps to be taken in the same day:
• First step (18 points): 18 multiple-choice (each correct answer is worth 1 point) or true-or-false questions (each question is made up of four statements worth 0.25 point each, the whole question awards 1 point if completely correct). The final score is the sum of the correct answers. Wrong answers are worth 0 points as well as unanswered questions. The maximal score that the first step awards is 18 points. The minimum score required to proceed with the second step is 12 points.
• Second step (12 points): 3 open questions, with a maximum word count of 200 each, where the students may discuss a phenomenon. Each open question is worth 4 points. The maximal score that the second step awards is 12 points.
The score of the written test (maximal 30 points) is the sum of the score achieved in the two steps.

If the overall score of the written exam is:
-Below 18/30, the candidate fails the exam.
-Above 18/30 and below 24/30 ($18<x<24$) the candidate keeps the score of the written exam as final grade.
-Students achieving a score equal or above 24/30 can choose to keep as final grade 24/30 without taking the oral exam, or they can try to improve the grade with the oral exam (the grade can also be decreased in case of poor performance).

The oral exam evaluates student’s communication and problem-solving skills. The final score can go up to 30 + Laude.

Second Term:
Students will be evaluated through a
- written test including a) multiple choice-test pertaining to all the subjects presented during physiology lectures of the second term (5 questions); b) problems of applied physiology, including clinical cases related to the topic (10 problems).
Students can try to improve the grade with the oral exam (the grade can also be decreased in case of poor performance).

The final mark will be obtained by the arithmetic average between the marks of two exams (first and second term).

It is not possible to take the (physiology) exam of the second semester without having passed the (physiology) exam of first semester.

Testi di riferimento
After the lessons covering a section of the program, students will be provided with the related didactic materials.

Main textbook:

- Kandel/Schwartz/Jessell, Principles of neural science, VI edition, McGraw-Hill Education 2021.
- Boron and Boulpaep, Medical Physiology, 3th Edition. Elsevier 2016;

Altre informazioni

Students must know the principles of the functional organization and neurophysiology of the human central and peripheral nervous system including the basic principles of sensory systems. The course is aimed at providing a framework for understanding brain systems for sensation and perception, pain, control of body movement, autonomous system and responses, human behaviours, cognitive functions, emotions, control of the sleep-wake cycle, in view to understand nervous system pathology.
In particular, at the end of the course, the student should be able to:
• acquire the general principle of the functional organization of the nervous system;
• associate the complexity of nervous systems (including human brain) with the molecular and cellular principles identified and studied in animal and cell models;
• present different neural functions and evaluate their potential clinical relevance;
• compare and differentiate different methods to study human brain function and structure;
• identify, map and label key functional structures and pathways in the brain;
• be familiar with the main sites of injury based on pathognomonic clinical signs and symptoms;

Relatively to the second term: the knowledge of physiological concepts essential for understanding mechanisms of disease is required. In particular, the student should be also able to:

- Describe cardiac muscle function and properties;
- Discuss unique characteristics of cardiac muscle;
- Discuss electrophysiology of the heart: the conduction system;
- Describe normal Electrocardiogram (ECG), and the main changes of ECG in cardiac arrhythmias;
- Describe and graph cardiac cycle details;
- Describe cardiac function in relation to change of preload, afterload and contractility;
- Understand the pressure, volume and flow changes during the cardiac cycle;
- Describe expected auscultation sounds in physiology and pathophysiology (murmurs);
- Discuss factors that related cardiac output to venous return;
- Delineate the way cardiac output can be regulated;
- Discuss the fundamentals of fluid dynamics and methods to measure blood flow and pressure;
- Describe and graph arterial pressure in systemic and pulmonary circulations;
- Discuss the regulation of arterial pressure (brief term, middle-term and long-term regulation);
- Discuss local control of blood flow (autoregulation and paracrine effects);
- Discuss unique characteristics and phasic aspects of coronary flow;
- Describe renal body fluids regulation;
- Describe structure and function of the kidney and nephrons;
- Describe and discuss renal clearance;
- Describe glomerular filtration rate and renal hemodynamics;
- Describe transport properties of nephron segments;
- Discuss urine concentration and dilution;
- Describe Na+ balance and regulation of extracellular fluid volume;
- Discuss K+ balance;
- Describe Ca2+ and phosphate balance;
- Describe pulmonary mechanics (pressure, volume, compliance, resistance, wall tension);
- Describe and graph lung volumes and capacity and alveolar ventilation;
- Describe unique characteristics of the pulmonary circulation;
- Describe pulmonary gas exchange;
- Discuss respiratory control;
- Discuss acid-base balance and role of buffers, kidneys and lungs;
- Describe the characteristics of the enteric nervous system and its interaction with the extrinsic nervous system in the regulation of the functions of each GI segment;
- Describe of GI reflexes and neurotransmitters involved;
- Describe the functions of each GI segment (secretion, digestion, absorption and motility);
- Indicate the composition of secretion of each GI segment and annexed glands; description of the functions of their components;
- Discuss the regulation of the secretory processes;
- Describe the cell type and anatomical location of the endocrine cells responsible for the production of the major GI hormones and their cellular targets; describe the stimuli that promote and inhibit the release;
- Describe the digestion of the nutrients;
- Describe the membrane transport mechanisms responsible for the absorption of: digestion products of sugars, proteins, lipids, vitamins and electrolytes by the intestinal epithelial cells;

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	16	BIO/09

Stampa del 06/05/2025

Propaedeutics of Clinical Practice [1204218]

Offerta didattica a.a. 2024/2025

Docenti: PAOLO GALLO

Periodo: Secondo Ciclo Semestrale

Obiettivi formativi
The student should be able to establish a trust and collaborative relationship with the patient, to recognize their emotions and to respond correctly, even in difficult situations; the student will learn some methodologies that favor this approach. (Dublin descriptors: communication skills)
The student will have to learn to take personally a clinical history, identifying the patient's active and non-active clinical problems to subsequently record the history based on traditional criteria (e.g. family, physiological, proximate and remote medical history). (Dublin descriptors: autonomy of judgment)
The student will have to learn the main signs and symptoms for systems; learn to critically evaluate the meaning of each sign and / or symptom, connecting it with the overall framework (Dublin descriptors: autonomy of judgment).
Students will learn to recognize, interpret, and correlate diagnostic images with pathophysiological, diagnostic, and prognostic criteria. The course will cover both theoretical and practical aspects of the main imaging techniques, with particular emphasis on their clinical applications.
The student will be able to identify in a realistic context the sensitivity, specificity and predictive value of common signs and symptoms, and images for elaborating a diagnostic hypothesis.

Prerequisiti
Basic knowledge of anatomy, physiology, and general pathology.

Contenuti del corso
Programma
• General care and attitudes. Wash up and disinfection of the hands. Gloves, surgical suit and masks. Antiseptics and disinfectants. Separation of the wastage
• Analysis of the clinical information and its interpretation. Plan of investigation of the patient. Evaluation by problems as a study method. Methods of palpation of some organs. Points of sensibility. Suggestion of the diagnosis.
• General physical examination of the surgical patient and operated patient. Basic concepts for performing an objective examination.
• Pain. General aspects. Kinds of pain. Visceral pain. Pain as a symptom. Abdominal pain – physical examination. Specific characteristics of the abdominal pain.
• Alterations of the digestive and urinary function: alterations of digestive transit, basic clinical anatomy, pain in the main acute abdominal syndromes.
• The local objective examination of swelling, continuous solutions, neck and head, chest, abdomen and genitals, limbs.
• General and specific clinical semiotics of the breast
• General and specific clinical semiotics of hernias of the abdominal viscera and their complications: Inguinal, crural, umbilical, epigastric or Linea albahernia, internal hernias.
• General and specific clinical semiotics of oesophageal and gastric pathology: Gastric Ulcer, Zollinger-Ellison Syndrome. Malignant tumours. Gastroesophageal reflux.
• General and specific clinical semiotics of the duodenum and small intestine: Duodenal ulcer. Intestinal infarction, intussusception, proportions and rates, incidence, prevalence, mortality. Meckel diverticulum.
• General and specific clinical semiotics of the large intestine: Acute appendicitis, Colon diverticulosis, Haemorrhoids, Rectal prolapse, Fissures, Abscesses, Anorectal fistulas, Benign and malignant tumors.
• Clinical semiotics of digestive haemorrhages (Upper and Lower Digestive Tract)
• Clinical semiotics of peritonitis: Acute diffuse, chronic, localized peritonitis. Clinical forms of peritonitis. Subphrenic Abscesses. Pelvic peritonitis.
• General and specific clinical semiotics of intestinal occlusion: definition, etiopathogenetic classification, pathophysiology. Differential semiotics of several types of ileus.
• General and specific clinical semiotics of the liver, biliary tract and pancreas: Acute and chronic cholecystitis, common bile duct stones, jaundice of surgical interest and their classification, biliary-digestive fistulas, tumours of the biliary tract, pancreatic tumour, acute and chronic pancreatitis.
• Physical semiotics of thyroid diseases
• Wounds. Stitching material. Wounds and their characteristics. Suturing techniques. Specific attitudes. Bandaging.
1. Analysis of Clinical Information and Its Interpretation

• Integration with Imaging: Application of clinical information to guide imaging decisions, emphasizing the selection of appropriate imaging modalities based on patient symptoms and history.
• Imaging Interpretation: Fundamentals of interpreting radiographs, CT, MRI, and ultrasound images, including the identification of normal and pathological findings.
2. Imaging of Digestive and Urinary Function
• Digestive Imaging: Techniques such as barium studies, abdominal ultrasound, and CT scans for assessing alterations in digestive transit and diagnosing acute abdominal conditions.
• Urinary Imaging: Role of ultrasound, intravenous urography (IVU), and CT in evaluating urinary tract abnormalities, including the detection of stones and infections.
3. Imaging of Abdominal Wall Hernias
• Hernia Imaging Techniques: Use of ultrasound and CT scans for the diagnosis and assessment of abdominal wall hernias, including inguinal, umbilical, epigastric, and their potential complications.
4. Imaging of Oesophageal and Gastric Pathology
• Oesophageal and Gastric Imaging: Application of barium swallow and upper GI series in evaluating conditions such as gastroesophageal reflux, ulcers, and gastric tumors.
5. Imaging of Duodenal and Small Intestine Pathology
• Advanced Enterography: Use of CT and MRI enterography to assess conditions such as duodenal ulcers, intestinal infarction, and small bowel tumors.
6. Imaging of Large Intestine Pathology
• Colon Imaging: Implementation of CT colonography for diagnosing conditions such as acute appendicitis, diverticulosis, and colorectal tumors.
• Perianal Disease Imaging: Specialized use of MRI to evaluate perianal conditions, including fistulas, abscesses, and tumors.
7. Imaging of Digestive Hemorrhages
• CT Angiography: Utilization of CT angiography to localize and assess the source of gastrointestinal bleeding.
8. Imaging of Peritonitis
• Peritonitis and fluid collection assessment Imaging: Use of abdominal ultrasound and CT to diagnose peritonitis and identify complications such as abscess formation.
9. Imaging of Intestinal Occlusion
• Obstruction Imaging: Key imaging modalities such as abdominal X-ray and CT for diagnosing various types of intestinal obstruction, including mechanical and paralytic ileus.
10. Imaging of Liver, Biliary Tract, and Pancreas
• Hepatobiliary Imaging: Utilization of ultrasound, CT, and MRI to assess liver and biliary tract conditions like cholecystitis, jaundice, and tumors.
• Pancreatic Imaging: Application of CT and MRI in diagnosing pancreatic conditions such as pancreatitis and pancreatic cancer.
11. Imaging of Thyroid Diseases
• Thyroid Imaging: Techniques such as ultrasound and fine-needle aspiration (FNA) for evaluating thyroid nodules and other thyroid pathologies.

Metodi didattici

The lessons are held with different methodologies depending on the topic covered: lectures, interactive lessons, videotapes, presentation and discussion of clinical cases to apply theoretical knowledge. On the proposal and initiative of the students, ad hoc exercitations can be organized on topics of greater complexity or of particular interest. The internship takes place with the following objectives: learning to take a clinical history, and put it in writing in the form of the traditional medical history and problem oriented. Learn the use of the main terms of medical semeiotics; learn to approach patients of different ages and social and clinical conditions; learn to collect the objective signs of physical examination of the various body systems. Sessions are planned in the simulation room.

Modalità di verifica dell'apprendimento

Learning assessment includes:
• A practical test in the simulation room according to Objective Structured Clinical Examination (OSCE) principles, in which the performance of semeiotic manoeuvres will be evaluated.
• A written test consisting of 30 multiple choice quizzes on topics of medical and surgical semeiotics and digital images (four answers per quiz of which one only is correct).
At the end, the examination commission will communicate the final score based on the average between the practical test and the written test score.
The student will be entitled to ask to take the oral exam to review the final grade, even if the Commission does not deem it necessary. Regardless of the number of students enrolled in each session, the written test shall always be performed. Before the oral test the student will be made aware of the result of the written test. The practical test is considered passed if the student reaches a minimum mark of 20/30; in any case, once the practical test has been passed, it must not be carried out again in subsequent exam sessions.
Active participation during lectures and professionalizing activities may also influence the final evaluation.

Testi di riferimento

- Dover AR, et al Macleod's Clinical Examination. 15th Edition 2024
- John S. P. Lumley, Anil K. D'Cruz, Jamal K. Hoballah. Hamilton Bailey's Demonstration of Physical signs in Clinical Surgery. Taylor & Francis Ltd, 19° edition
- Dioguardi N e Sanna GP. Moderni aspetti di Semeiotica medica. SEU
- Carannante F. – Compendio di Chirurgia. NDL Pub 2023
- Swartz's - Principles of Surgery
- Talley NJ, O'Connor S. Clinical examination. Elsevier Pub. 2021.
- Felson's Principles of Chest Roentgenology. Elsevier Pub. 2019
- Fundamentals of Body CT. Elsevier Pub. 2022
- Radiology Review Manual. Lippincott Williams & Wilkins Pub. 2021
- Clinical Imaging: An Atlas of Differential Diagnosis. Elsevier Pub. 2018

Altre informazioni

With reference to the general physical and per apparatus examination, at the end of the course the student must be able to:
- - Assume the right attitude for the correct execution of physical examination;
- - Identify and describe the somatic and general characteristics of the patient, interpreting the alterations in a pathophysiological key;
- Carry out the physical examination of the different parts of the body, describing their characteristics and interpreting the alterations in a pathophysiological key. They will also have to pass from the results of the anamnesis and physical examination to the diagnostic hypotheses with reference to test results as a guide for personal study (Dublin descriptors: applied knowledge and understanding, and the ability to learn).
Students will develop the skills to perform and interpret the main imaging techniques used in radiodiagnostics. Emphasis will be placed on the ability to correlate imaging findings with clinical pathology and effectively communicate results to other healthcare professionals. Students will also acquire practical skills in the use of imaging techniques and the management of patients undergoing these procedures.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	4	ING-IND/34, MED/09, MED/18

Stampa del 06/05/2025

Propaedeutics of Medicine [1204114]

Offerta didattica a.a. 2024/2025

Docenti: GIULIA LEANZA

Periodo: Primo Ciclo Semestrale

Obiettivi formativi

Biology: The course of Biology aims to provide students with the functional logic of living systems, with a focus on the properties and functions of the cell as the basic unit of life. Students will learn the mechanisms that regulate cellular processes and activities and the interactions between cells; the principles that govern the diversity of biological units, in relation to their structural and functional characteristics, modes of gene expression, both within a single individual (differentiation), and longitudinally, throughout evolution. Fundamental principles of molecular biology and genetics will be covered, with emphasis on aspects important to medical students, such as the cellular and molecular basis of diseases, including tumor progression and intellectual disabilities, and the effects of drugs on cellular structure and function They will have to know the biological basis of life: from the organization of the genome to the gene expression and the biosynthesis of functional proteins. At the end of the course, students should be able to describe the structural and functional organization of the cell and the interconnection existing between gene expression and regulation, functional protein synthesis and cell's differentiation and specialization.
☐ Chemistry and Propedeutics of Biochemistry: Students must be able to describe, with adequate chemical terminology, the properties of matter, from atom to chemical bond and material composition. They should also master the concepts of oxidation-reduction, pH, acids and bases, solutions, with particular attention to energy and bioenergetics. They also have to know the structure and function of macromolecules. Student should be able to solve exercises on the electronic configuration of the elements, to be able to draw the structure of a molecule, balance a reaction, and calculate the concentration of solutions. Students should also apply the acquired concepts of general chemistry in describing the characteristics and functions of macromolecules. The student should be able to critically evaluate the characteristics of each molecule and apply the concepts learned in daily life and the functioning of a biological organism. The student must be able to express his / her knowledge of chemistry and propedeutics of biochemistry using appropriate chemical language terms. Students should deepen his / her knowledge in a critical manner. In this regard, the teacher will provide, in addition to the information on the texts and didactic material, indications for finding other material for study and exercises useful for the construction of an autonomous way.
☐ Genetics: students will achieve knowledge concerning genetic/molecular mechanisms underlying different types of genetic diseases (true Mendelian disorders and multifactorial disorders) including imprinting diseases. They will also know the principles of population genetics, cancer genetics and laboratory techniques used in medical genetics in both a research and diagnostic setting. The laboratory sessions aim to give an idea give an idea of the activities related to genetics that take place in the laboratory.
☐ Physics: The course aims to provide knowledge of the fundamentals of physics, including classical mechanics, thermodynamics, and electromagnetism, focused both on theory and practical applications. Students will develop the ability to grasp the essential aspects of physical processes, identifying main physical quantities and physical laws describing systems and observed phenomena and using coherent and descriptive mathematical models.

Prerequisiti

Propedeuticity: Propedeutics of Medicine is propedeutic for Biochemistry and Immunology and Genetics

Contenuti del corso

Biology Programme
Basic concepts of Biology: Introduction to biology and differences between cell and molecular biology. The importance of biology in Medicine and Surgery. General characteristics of living organisms and their classification. Quantities and dimensions of biological units. Levels of organizational complexity. Prokaryotic cell model and eukaryotic cell model. Recalls to the structure and function of major biological macromolecules: carbohydrates, lipids, proteins and nucleic acids. Molecular interactions in biological structures and entities.

The cell and cell organelles: Cell theory. Early observations and recognition of different cell types. Evolutionary tree of phyla and the cell types within. Endosymbiont theory. Simple aspects of mitochondrial biology (include some newer aspects such as mitochondrial sharing). Biological membranes (structure, properties and functions). Importance/challenges in connection to membrane biology. Main cytoplasmic organelles found in the eukaryotic cell: nuclear compartment (karyotheca, nuclear pores, nucleolus and nuclear lamina). Smooth and rough endoplasmic reticulum. Golgi apparatus. Lysosomes and peroxisomes. Mitochondria. Concept of cellular transport. Trafficking.

Topology of proteins. Sorting of proteins via localisation sequences and or trafficking (expanding on the concept introduced earlier). Endo/exocytosis etc. Concept of intercellular shuttling of protein or nutrients.

Genetic Information in Eukaryotes: Development of unicellular vs multicellular organisms. Complex multicellular organisms with differentiated cells. Concept of cell differentiation and in disease de-differentiation. Genes dictate cellular identity in Embryogenesis and adulthood. Eukaryotic genomes are complex (include regulatory elements, viral elements, repeat elements, transposons etc. All done more conceptually, as they will lack some of the basis). Model organisms: Introduce the major ones with examples. Yeast for genetic and metabolic studies. Flies for development. C elegans for cell death, ageing etc. Frogs also for embryogenesis. Fish increasingly for diseases as well. Mice for most human diseases. Primates (rarely) for some cognitive studies and some human disease. Humans in population studies, volunteer studies and clinical trials.

DNA replication, repair and homologous recombination: The structure and function of the DNA. Chromosomal DNA and its packaging in the chromatin fiber. Chromatin structure and function. The global structure of chromosomes. Molecular basis of hereditary information. DNA replication mechanism. The initiation and completion of DNA replication in chromosomes. DNA repair mechanisms. DNA homologous recombination.

How cells read the genome: From DNA to protein. From DNA to RNA. RNA Molecules Are Single-Stranded. Transcription Produces RNA Complementary to One Strand of DNA. RNA Polymerases Carry Out Transcription. Cells Produce Different Categories of RNA Molecules. Signals Encoded in DNA Tell RNA Polymerase Where to Start and Stop. Transcription Start and Stop Signals Are Heterogeneous in Nucleotide Sequence. Transcription Initiation in Eukaryotes Requires Many Proteins. RNA Polymerase II Requires a Set of General Transcription Factors. Polymerase II Also Requires Activator, Mediator, and Chromatin- Modifying Proteins. Transcription Elongation in Eukaryotes Requires Accessory Proteins. Transcription Creates Superhelical Tension. Transcription Elongation in Eukaryotes Is Tightly Coupled to RNA Processing. RNA Capping. RNA Splicing. Nucleotide Sequences Signal Where Splicing Occurs. RNA Splicing Is Performed by the Spliceosome. Mature Eukaryotic mRNAs Are Selectively Exported from the Nucleus. Noncoding RNAs Are Also Synthesized and Processed in the Nucleus. The Nucleolus Is a Ribosome-Producing Factory.

From RNA to proteins/ Control of gene expression and cell type differentiation. An mRNA Sequence Is Decoded in Sets of Three Nucleotides. tRNA Molecules Match Amino Acids to Codons in mRNA. tRNAs Are Covalently Modified Before They Exit from the Nucleus. Specific Enzymes Couple Each Amino Acid to Its Appropriate tRNA Molecule. Editing by tRNA Synthetases Ensures Accuracy. Amino Acids Are Added to the C-terminal End of a Growing Polypeptide Chain. The RNA Message Is Decoded in Ribosomes. Elongation Factors Drive Translation Forward and Improve Its Accuracy. Accuracy in Translation Requires an Expenditure of Free Energy. The Ribosome Is a Ribozyme. Nucleotide Sequences in mRNA Signal Where to Start Protein Synthesis. Stop Codons Mark the End of Translation. Proteins Are Made on Polyribosomes. Exposed Hydrophobic Regions Provide Critical Signals for Protein Quality Control. The Proteasome Is a Compartmentalized Protease with Sequestered Active Sites.

Signal transduction: Different classes of proteins and their function in cell biology: structural proteins, receptors, enzymes. Cell signaling and major signal transduction pathways. Heterotrimeric G-protein-coupled receptors, protein-tyrosine kinase receptors, and receptors for steroid hormones. First messengers and second messengers. Wnt and other systems. Cell-cell interactions and communication.

Molecular mechanisms of cell survival, cell proliferation and cell death: mitosis, meiosis, apoptosis, necrosis and autophagy.

Molecular bases of cancer. General characteristics of cancer cells. Molecular mechanisms underlying tumorigenesis. Oncosuppressor and oncogenic genes. Driver and passenger genes. Mutator phenotype. Molecularly targeted therapies.

Chemistry and Propedeutics of Biochemistry Programme

Inorganic chemistry: The atomic structure: nuclei and electrons. Electronic configuration: electronegativity. Covalent bond types on the basis of the electronegativity of the atoms involved. Molecules: reactivity and molecular chemical bonding. The spatial distribution of electrons and the shape of molecules. Acidic and basic oxides. Acid-basic theories. Salts. Fundamentals of chemical kinetics, the meaning of activation energy. Chemical equilibrium: acidic and basic solutions. The fundamentals of thermochemistry and thermodynamics. Chemical reactions and energy exchanges.
Organic Chemistry: Structure and chemical bonds in organic molecules. Reactions types: addition, elimination, and substitution. Reaction mechanisms: radicalic and polar. Reagent types: nucleophiles, electrophiles, and radicals. Functional groups: nomenclature, physical properties, and chemical reactivity of biological interest: aliphatic, olefinic, and aromatic hydrocarbons. Functional groups: alcohols, phenols, thiols, amines, carbonylic compounds: aldehydes, ketones, carboxylic acids, and derivatives.

Preparatory biochemistry: the chemistry of biological system molecules. Carbohydrates: monosaccharides, oligosaccharides, and polysaccharides. Lipids: fatty acids, lipids, complex lipids and steroids. Proteins: aminoacids and peptide bonds. Peptides. Nucleic Acids: purines, pyrimidines, nucleotides, and nucleosides; the phosphodiesteric bond. DNA and RNA structures and functions.

Genetics Programme

• Basics concepts of genetics: from Mendelian inheritance to complex diseases
• Mendelian diseases and associated inheritance models
• Dynamic mutations and their associated diseases
• Human Genome Organization
• Human chromosomes, karyotype, chromosomal anomalies of number and structure
• Multifactorial diseases and the concepts of polygenic risk score for diseases
• Epigenetics and imprinting diseases
- Linkage disequilibrium and haplotype maps
• Fundamentals of molecular genetics techniques: array CGH, MLPA, FISH, exome/target/whole genome sequencing (NGS), Sanger sequencing
• Principles of genetic testing in medical practice
• Genetic Load in medicine (genetic tests – genetic counselling- clinical genetics)
• Bioinformatic tools in medical genetics
• Population Genetics and pedigree analysis
• Basic concepts of cancer genetics (oncogenes, caretakers and gatekeepers genes)
• Practical activities: Attendance in medical genetics laboratory

Physics Programme

• Definition of physical quantities. Measurement and unit systems. Scalar and vector quantities. Vector algebra.
• Kinematics in one and two dimensions: motion at constant acceleration, projectile motion.
• Material point dynamics. Law of inertia and inertial frames. Newton's second and third laws. Forces: weight, tension, normal force and friction.
• Uniform circular motion. Newton's law of universal gravitation and gravitational field. Kepler's laws.
• Work and energy. Kinetic energy. Work-energy principle. Gravitational potential energy. Elastic potential energy. Conservation of energy. Conservative and non-conservative forces. Linear momentum.
• Dynamics of rigid extended bodies. Center of mass. Newton's second law of motion for translational dynamics of the center of mass. Rotation about a fixed axis. Angular acceleration and torque. Moment of inertia. Rotational kinetic energy. Rolling without slipping. Static equilibrium.
• Fluids statics and dynamics: pressure, Stevin's law, Pascal's principle, Archimedes' principle and buoyant force, mass and volume flow rate, equation of continuity, Bernoulli's principle, viscosity and Poiseuille's equation.
• Temperature. Thermal equilibrium. Zero law of thermodynamics. Absolute temperature and ideal gas law. Heat. Internal energy and first law of thermodynamics. Ideal gas processes. Second law of thermodynamics.
• Electric charge and Coulomb's law. Superposition principle. Electric field. Gauss's law with applications. Electric potential. Electric capacitance and capacitors.
• Electric current. Ohm's laws. Electric DC circuits. Resistances in series and parallel. Kirchhoff's rules. Joule effect.
• Magnets and magnetic field. Electric current as a source of magnetic field. Force on an electric current in a magnetic field. Current-current interaction. Biot-Savart law. Electromagnetic induction and Faraday's law.
- Introduction to geometrical optics: reflection, refraction, lenses

Metodi didattici

The aims of the course will be achieved through a combined approach between: traditional inductive teaching method (lectures), practical activities, problem-based learning (PBL) or clinical-based learning (CBL). Several didactic activities will be combined in the same week. Each week will be oriented to a specific theme and will begin with an introduction to the topic, through a plenary session of frontal teaching during which biological problems or targeted clinical cases will be proposed to the students. . Teachers and tutors will always be available to students, to guide the PBL/CBL and practical activities, and for tutorials and clarifications.

Modalità di verifica dell'apprendimento

The final exam will take place at the end of the course, in the sessions foreseen by the academic calendar.
The exam consists of three written tests, which will be held at three separate times, containing multiple-choice questions (MCQ), short essays, and exercises. The written tests will be divided as follows:

BIOLOGY + GENETICS: 15 multiple-choice questions + 2 short essays for each subject;
CHEMISTRY AND PROPEDEUTICS OF BIOCHEMISTRY: 30 multiple-choice questions;
PHYSICS: 30 problem-based questions.
For the Physics test, an interview will be conducted to discuss the written test. For the other subjects, the oral exam will be at the candidate's discretion in order to improve the final score.

The final score of Propedeutics of Medicine will be based on a numerical scale from 0-30 and a weighted average will be calculated based on the number of credits for each subject.

The examination of the contents will be graded according to the following criteria:

-0-17: major deficiencies and/or inaccuracy in knowledge and understanding of topics; limited ability to analyze and synthesize; frequent generalizations.
-18-20: Barely sufficient knowledge and understanding of topics with possible imperfections; sufficient ability to analyze synthesis and independent judgment.
-21-23: Routine knowledge and understanding of topics; Correct analysis and synthesis skills with coherent logical argumentation.
-24-26: Fair knowledge and understanding of topics; Good analytical and synthesis skills with rigorously expressed arguments.
-27-29: Comprehensive knowledge and understanding of topics; Remarkable skills of analysis, synthesis. Good independent judgment.
-30-30L: Excellent level of knowledge and understanding of topics. Remarkable analytical and synthesis skills and independent judgment. Arguments expressed in a brilliant way.

Testi di riferimento

BIOLOGY
Suggested Textbooks: MOLECULAR BIOLOGY OF THE CELL, 6TH EDITION, ALBERTS
Alternative book: ESSENTIAL CELL BIOLOGY, 6TH EDITION, ALBERTS

CHEMISTRY AND PROPEDEUTICS OF BIOCHEMISTRY
Suggested Textbooks:
Chemistry by Zumdahl SS and Zumdahl SA, Brooks/Cole eds.
Organic chemistry, a brief course by Atkins R.C. and Carey F.A., McGraw- Hill International Edition.

GENETICS
Suggested textbooks:
Medical Genetics - Jorde Carey Bamshad, 6th edition, Elsevier
Medical Genetics - G. Bradley Schaefer, James N. Thompson Jr. Mc Graw Hill
Other materials: for the laboratory sessions protocols and slides uploaded on e-learning.

PHYSICS
Suggested Textbook: Douglas C. Giancoli, “Physics for Scientists & Engineers with Modern Physics” Pearson New International Edition (English Edition).

Altre informazioni

EXPECTED RESULTS:
☐ Biology: At the end of the course, students should be able to achieve an adequate knowledge of cell structure, correlating the morphological organization of the cell with the fundamental mechanisms of molecular biology and understanding the importance of cell differentiation and specialization in the morpho-functional organization of tissues, in development of the organism and in the physiological interactions between cells.
☐ Chemistry and Propedeutics of Biochemistry: The course is finalized to give students fundamental notions of chemistry essential to deal properly the study of biological, anatomical, physiological and biochemical aspects of movement and of physical exercise adaptation. Chemical concepts are proposed in a logical order, starting from atoms to molecules, and going on with solutions, acids and bases and redox reactions, with several links to everyday experience. Basic information of organic chemistry aimed to comprehension of macromolecule structures and functions are given. Comprehension and knowledge of chemical- physical and molecular mechanisms that are at the base of vital processes. Knowledge of chemical compounds involved in biological processes and comprehension of some chemical reactions active during vital processes.
☐ Genetics: students will acquire knowledge about the human genome organization, genetic mechanisms underlying Mendelian disorders and multifactorial disorders, fundamentals of population genetics and molecular genetics techniques and bioinformatics tools commonly used in the diagnosis of genetic diseases. The practical sessions will allow students to get a taste of some laboratory activities that routinely take place in a medical genetic setting in both a research and diagnostic context.
☐ Physics: Students will acquire adequate knowledge of physical laws and related mathematical aspects of classical physics, including Kinematics and Newtonian dynamics, Fluids, Calorimetry and thermodynamics, and Electromagnetism. Students will learn methodological-operational aspects of physics to interpret and describe medical problems.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale	Medicine and Surgery (2019)	comune	19	BIO/10, BIO/13,

Ciclo Unico 6 anni

FIS/07, MED/03,
BIO/10, MED/03

Stampa del 06/05/2025

Structure and Basic Functioning [1204119]

Offerta didattica a.a. 2024/2025

Docenti: GIORGIO VIVACQUA

Periodo: Secondo Ciclo Semestrale

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	8	BIO/09, BIO/17, BIO/17, BIO/17

Stampa del 06/05/2025

TEACHING ELECTIVES [12044E1]

Offerta didattica a.a. 2024/2025

Docenti:

Periodo: Ciclo Annuale Unico

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	2	NN

Stampa del 06/05/2025

TEACHING ELECTIVES [12046E1]

Offerta didattica a.a. 2024/2025

Docenti:

Periodo: Ciclo Annuale Unico

Syllabus non pubblicato dal Docente.

L'attività didattica è offerta in:

Facoltà Dipartimentale di Medicina e Chirurgia

Tipo corso	Corso di studio (Ordinamento)	Percorso	Crediti	S.S.D.
Laurea Magistrale Ciclo Unico 6 anni	Medicine and Surgery (2019)	comune	1	NN

Stampa del 06/05/2025