PROGRAMMES EDUCATIONAL ACTIVITIES COURSE OF STUDY SINGLE-CYCLE DEGREE COURSE IN MEDICINE AND SURGERY
A.Y. 2024/25

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1 YEAR 1 SEMESTER

INTEGRATED COURSE: BASICS OF FIRST AID 1

(2 CFU – 35 hours)

- Prerequisite:
Elementary notions of anatomy and physiology

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
the student should be familiar with the tools and techniques of primary resuscitation, the BLS-D algorithm, airway obstruction clearance techniques, and the management of common out-of-hospital emergencies / emergency. Recognize cardiac arrest, alert territorial rescue, initiate BLS-D maneuvers; if available and indicated, use automatic external defibrillator.
AUTONOMY OF JUDGEMENT:
the student will learn to apply the BLS-D algorithm independently and will acquire the fundamental knowledge and skills to decide when the BLS-D approach is indicated.
COMMUNICATION SKILLS:
the student will learn to collaborate effectively with other "lay" rescuers, expose the relevant data of a given case to the Emergency medical services dispatcher, and autonomously continue cardiopulmonary resuscitation maneuvers.
ABILITY TO LEARN:
The student will learn to acquire the technical and organizational skills for the basic management of medical emergency through simulative techniques (simulation based learning), he/she will thus be exposed to a highly interactive and immersive learning mode, with important insights into the choices and actions made during simulation. In addition, the student will learn fundamentals of pathophysiology and critical care medicine that he or she will be able to expand upon in more advanced courses.

-Contents:
DIDACTIC UNIT: MED/41 -BASICS OF FIRST AID (1 CFU – 10 hours)
Contents Theoretical lessons (2 CFU 10) and a 10-hour internship
BLS-D module
General information on cardiac arrest
The safety of the scene
A-B-C-D algorithm
External heart massage
Mouth-to-mouth ventilation
Ventilation with additional tools; pocket mask, AMBU balloon, face masks. Guedel cannulas
The AED, modes of operation, use and safety practices
Drowning
Other emergencies

Hypoglycemia
Exertional dehydration
Heat stroke
Presyncope
Dental avulsion
Hemorrhage and tourniquet use
Cervical spine motion restriction
Tonic-clonic seizures

DIDACTIC UNIT: MED/41 - BASICS OF FIRST AID 1 INTERNSHIP (1 CFU – 25 hours)
Interactive simulations on the dummy:
Judging the possibility and risks of an emergency rescue;
Recognition and co-ordinated treatment of cardiac arrest;
Use of AED (automatic defibrillator);
Performing non-invasive techniques (Rautek, Heimlich, Trendelemburg,
Patency, Haemostasis, etc.) using volunteers;
Performance of invasive manoeuvres (Cardiac massage, Pulmonary
pulmonary insufflation, etc.) using a manikin

-Didactic methods
The course is delivered through face-to-face lectures using PowerPoint presentations and practical activities in a simulated medical teaching environment. Frontal lectures may be alternated with innovative teaching methods aimed at actively involving students in the learning process (active learning) through the analysis and interpretation of clinical cases.

- Modalities of learning verification
Registration for the examination sessions will be carried out by logging onto ESSE3.
Students must have attended at least 70% of the total face-to-face lectures and at least 70% of each module, as well as all the hours scheduled for the professional activity, to be eligible to sit the examination.
The examination will consist of a written test with multiple choice and open questions.
Each question will be worth one point, with a total of thirty points available. A minimum of 18 points is required to pass.
Exams will be marked during the periods specified in the C.L. Teaching Calendar. Examination instructions

- Reference texts
1. IRC BLS-D basic cardiopulmonary resuscitation
2. ERC cardiopulmonary resuscitation with automated external defibrillator

BIOLOGY AND GENETICS

(7 CFU – 70 hours)

– Prerequisite:
A prerequisite for attending the course of Biology and Genetics is the basic general and scientific knowledge required to pass the admission test. Moreover, the student must have a good knowledge of Physics, General and Organic Chemistry courses.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
the student will have to know the structure and function of eukaryotic and prokaryotic cells, viruses, and their mutual interaction; the cellular events shared by all living organisms and the molecular mechanisms involved; expression and regulation of the genetic information at cellular and molecular level; the process of cell reproduction and how inheritable characters are transmitted, and which factors affect genetic variability.
AUTONOMY OF JUDGEMENT:
the student will have to make personal judgments to solve complex problems and and search independently the necessary information based on scientific evidence.
COMMUNICATION SKILLS:
the student will have to describe clearly, thoroughly and with an appropriate scientific language the theoretical and practical knowledge acquired throughout the course.
ABILITY TO LEARN:
the student will learn to gather, organize and critically interpret the new scientific findings and biomedical information from different sources and databases available and identify what is necessary for continuing education.

- Contents:
BIO/13 - BIOLOGY AND GENETICS (7 CFU – 70 hours)
Introduction to Biology:
Overview of living organisms. The cell. Single-celled and multi-celled organisms.
Macromolecules: monosaccharides and polysaccharides, fatty acids and lipids, aminoacids and proteins, nucleotides and nucleic acids.
Molecular biology:
The central dogma of molecular biology.
DNA replication. Experiment by Meselson and Stahl.
The enzymes of replication: DNA-polymerases. The role of DNA-primase.
Telomere replication: telomerase.
Gene expression: from DNA to proteins.
Transcription: the different RNAs in prokaryotes and eukaryotes.
The enzymes of transcription: RNA-polymerases. Promoters. Splicing.
Translation: protein syntesis in prokaryotes and eukaryotes. The genetic code.
Protein sorting.
DNA mutations. Repair mechanisms.
Regulation of gene expression in prokaryotes: the operon. Induction and repression of batterial operons.
DNA recombination in bacteria: transformation, conjugation, transduction.
Cell division:
Reproduction of the prokaryotic cell.

Reproduction of viruses. Lythic and lysogenic cycles.
Reproduction of the eukaryotic cell. The cell cycle.
Somatic cells and germ cells.
Somatic cells division: mitosis. Stages of mitosis.
Germ cells division: meiosis. Stages of meiosis. Crossing over.
Sources of genetic variation.
Male and female gametogenesis.
Karyotype. Normal and abnormal karyotypes.
Chromosomal abnormalities. Aneuploidy: trisomy e monosomy.
Structural aberrations: deletions, duplications, inversions, translocations. Robertsonian translocations.
Meiotic and mitotic non-disjunctions. Mosaicism.
Genetics:
Mendel's experiments. Alleles.
The principle of segregation: dominance e recessiveness. Homozygosity and heterozygosity.
Genotype and phenotype.
The principle of independent assortment.
The chromosome theory of inheritance.
Genetic linkage and crossing over.
Incomplete dominance and co-dominance. Penetrance and expressivity.
Genes interaction: epistasis.
Transmission of hereditary characters. ABO blood group.
Sex determination.
Autosomal recessive mode of inheritance.
Autosomal dominant mode of inheritance.
X-linked inheritance.
Mitochondrial inheritance.
Pedigree analysis of mono-factorial segregating characters.
The genetic information:
Experiments by Griffith. Experiments by Avery, MacLeod and McCarty. Experiment by Hershey and Chase.
The chemical composition of DNA. Chargaff rules.
DNA: structure and characteristics. The model of the double helix by Watson e Crick.
DNA in prokaryotes: the bacterial chromosome.
DNA in eukaryotes: chromatine. From nucleosome to eukaryotic chromosome. Chromosomes and chromatids. Haploid and diploid organisms. Homologous chromosomes. The genome.
Genome organization in viruses, bacteria and eukaryotic cells.
Structure and function of proteins. Peptide bond. Primary, secondary, tertiary and quaternary structures of proteins. Enzymes.
Cell theory.
Structure of prokaryotic cell. Autotrophic and heterotrophic microorganisms.
Structure of eukaryotic cell: an overview on membranes, cell organelles and cytoskeleton. The nucleus. Mitochondria and chloroplasts. Ribosomes. Structure and function of plasma membrane. Endocytosis ed exocytosis. Viruses.

-Didactic methods
Frontal lectures

-Modalities of learning verification
The final examination of the course will be an oral test. The examination will assess your knowledge and understanding of the topics covered, your ability to link them, your ability to apply

them to real problems, and your communication skills, including your use of appropriate terminology.
Your final grade will be expressed in thirtieths. To pass the test, you must achieve at least a mark of 18/30. The grading scheme will be as follows:
(a) Sufficient (18 to 20/30)
The candidate demonstrates a basic and essential knowledge of the topics; relevant connections within the information; sufficient knowledge of the specific language.
b) Fair (21 to 23)
The candidate demonstrates a fair knowledge of the topics not limited to the basic and essential level; fair orientation between the contents; ability to grasp thematic and comparative links; fair ability to apply them to real problems; fair command of the specific terminology.
c) Good (24 to 26)
The candidate demonstrates solid and widespread knowledge of the topics. They can tackle even complex thematic areas and establish significant connections between topics. They have a good ability to apply to real problems and a good command of specific terminology with a fairly clear and appropriate exposition.
d) Excellent (27 to 29)
The candidate demonstrates a solid, widespread and thorough knowledge of the subjects. They can communicate the various topics autonomously, analytically and concisely. They have an excellent ability to apply the subject matter to real problems and an ability to argue critically on the subject matter of the discipline using the specific terminology.

e) Excellent (30-30 distinction)
The candidate displays a comprehensive and detailed understanding of the subjects, demonstrating the ability to communicate complex topics in an analytical and concise manner. They are able to apply their knowledge to real-world problems and engage in critical and interdisciplinary discourse, using precise terminology.

-Reference texts
General Biology and Genetics Texts
De Leo et al "Biologia e Genetica", Edises, 2020, IV ed.
Biology Texts
Karp "Biologia Cellulare e Molecolare", Edises, J. Iwasa, W. Marshall, 2021, VI ed. Alberts et al "L'essenziale di biologia molecolare della cellula", Zanichelli, VI ed. 2016

General Genetics Texts
Russell "Genetica", Pearson, Peter J. Russel 2019, V ed.
Genetica, G. Binelli et al., 2017

CHEMISTRY AND PROPEDEUTICAL BIOCHEMISTRY

(6 CFU – 60 hours)

– Prerequisite:
Basic scientific knowledge of Chemistry, Propedeutical Biochemistry, Biology and Genetics.

- Learning objectives:
Knowledge of the biomolecules as the organic compounds from which living organism are constructed and that derived from biological activities. Knowledge of structure, properties, function, interactions and metabolism of biomolecules.
The student has to know the characteristics of the biomolecules (carbohydrates, lipids, nucleotides, amino acids and proteins, vitamins) and their behavior in biological systems, their properties and their transformations. Especially, he will have to know some proteins of biomedical interest by evaluating their functional role. The student has to know the main pathways of energy metabolism, their integration and regulation in order to correctly interpret the physiological and pathological processes at the molecular level, the goal of more advanced courses.
The student has to know about genes and genomes structure and function, mammalian gene expression and technologies for DNA analysis in edical Sciences.
The student has to describe in a clear, comprehensive and appropriate scientific language the knowledge learned during the course.
KNOWLEDGE AND UNDERSTANDING:
To know the structure of the biomolecules, their reactivity, and their functions and in particular the structure and the physiological properties of myoglobin and hemoglobin. To know the general functions of the enzymes, the kinetic properties and the mechanisms of regulation of the enzymatic activity. To know the catabolic and anabolic pathways involved in energy metabolism, their compartmentalization in organs and tissues in humans. Understanding of the mechanisms that regulate metabolism and knowledge of the role played by enzymes, mechanisms of inhibition and modulation of their activity. Understanding of metabolic regulation at the cellular level and of metabolic integration.
AUTONOMY OF JUDGEMENT:
The student will be able to discern between fundamental and complementary topics, identifying the logical thread underlying the rational study of Biochemistry and Molecular Biology, and avoiding the merely mnemonic acquisition of definitions, schemes, equations, graphs and structural formulas;
COMMUNICATION SKILLS:
The student will be able to explain the course topics using formalism, language and vocabulary typical of the disciplines. Interact with the teacher arguing the salient points of the study program, with the necessary detail. Thanks to the interacting lessons will also be able to interact profitably with colleagues.
ABILITY TO LEARN:
The interaction with the teacher, the self-assessment tests, and the teaching material (lesson and exercise slides) will provide the student with the tools necessary for the fruitful, reasoned and non-mnemonic learning of the discipline.

-Contents:
BIO/10- CHEMISTRY AND PROPEDEUTICAL BIOCHEMISTRY (6 CFU – 6 hours)
BIOCHEMISTRY
Introduction to biochemistry (biomolecules; water effect on dissolved biomolecules; weak interactions in aqueous systems).
Structure and function of carbohydrates (monosaccharides, disaccharides, polysaccharides;

proteoglycans, glycoproteins and glycolipids).
Structure and function of lipid (fatty acids, storage lipids, structural lipids in membranes, cholesterol; lipids with specific biological activity; fat-soluble vitamins; lipoproteins).
Structure and function of proteins (aminoacids and peptide bond; peptides and proteins; primary, secondary, tertiary and quaternary structure; alfa-keratin, collagen and elastin; myoglobin and haemoglobin; oxygen and carbon dioxide transport; immunoglobulins).
Structure and function of water-soluble vitamins and their coenzymatic derivatives.
Enzymes (apoenzyme, cofactors and coenzymes, holoenzyme; enzyme-substrate complex and active site; enzymatic reaction mechanisms; enzyme kinetics; enzyme classification; several factors that affect the rate of enzyme-catalyzed reactions; enzyme activity regulation).
Introduction to metabolism (endergonic and exergonic reactions; catabolic and anabolic pathways; energy production and consumption in metabolism; role of ATP and other phosphorilated compounds; metabolism integration and regulation).
Carbohydrate metabolism (glycolysis and gluconeogenesis; alcohol and lactic fermentations and pyruvate oxidation to acethyl-CoA; the pentose phosphate pathway; glycogen lysis and glycogen synthesis).
Lipid metabolism (digestion, mobilization and transport; fatty acids: activation and transport into mitochondria; β-oxidation of saturated/unsaturated fatty acids, with even/odd number of carbon atoms; propyonyl-CoA fate; ketones bodies: formation and utilization; biosynthesis of cholesterol and fatty acids).
Aminoacid metabolism (transamination and oxidative deamination; amino acid carbon skeletons oxidation: glucogenic and ketogenic amino acids; metabolic fates of amino groups;; urea cycle; amino acid converted to biological amines by decarboxilation).
Energy production (citric acid cycle, oxidative phosphorilation: mitochondrial respiratory chain, mitochondrial electron flow coupled to proton gradient; ATP synthase complex; shuttle systems for mitochondrial oxidation of cytosolic NADH).

MOLECULAR BIOLOGY
Nucleic acids: Structure and function
DNA hybridization, molecular probes
Restrictions enzymes,
Cloning vectors, genomic libraries
Polymerase Chain Reaction (PCR)
Molecular methods for mutations detection. CRISPR/CAS9 genome editing
DNA sequencing by Sanger's Method and Next Generation Sequencing (NGS) Methods
Transcriptional regulation and gene expression in eukaryotes:
Trascriptional initiation complex: assembling and regulation
Controlling chromatin structure: remodeling complexes and chromatin modifiers
DNA methyation and genomic imprinting, imprinting diseases and molecular diagnosis
PremRNA maturation and gene expression regulation:
One gene many proteins: alternative splicing, promoter selection, RNA editing, start translation selection.
Post-transcriptional regulation of gene expression:
Cytoplasmic regulation of mRNA degradation
RNA interference
The immune system: somatic DNA recombination and genes expression.
Human Genome sequencing and its implications for human health.
DNA polymorphisms: use of minisatellites and microsatellites as polymorphic DNA markers, linkage analysis, GWAS, DNA databases, personal identification and paternity investigations.
Genomics, Transcriptomics, Proteomics, Pharmacogenomics

-Didactic methods:
Lectures: The foundation course in Chemistry and Biochemistry is divided into two phases. The first phase covers the fundamental concepts of general chemistry and the main classes of organic compounds and their reactivity. The second phase discusses the structure and physico-chemical properties of the most important classes of biomolecules.
Exercises: You will complete numerical exercises (mole, Avogadro's number, concentration of solutions, osmotic pressure, pH, stacks), structure formulas, chemical equations, and quiz tests with multiple-choice questions.
You will also complete supplementary teaching activities on the e-learning platform, which will support you in studying, carrying out exercises and tests.
-Modalities of learning verification:
The acquisition of the objectives will be verified by written tests and/or an interview. The written tests may be conditional on specific epidemiological conditions. If these do not permit this, the written and *in-itinere* tests will be replaced exclusively by the oral interview.
The written tests will be marked and, if sufficient, will be considered for the final assessment of the examination.
The final assessment, expressed in thirtieths, will be obtained from the grade/judgement of the *in itinere* tests and/or the final exam.
The final grade is based on a number of factors.
The quality of the knowledge, skills and competences possessed and/or manifested will be assessed.
(a) The appropriateness, correctness and congruence of the knowledge will be evaluated.
(b) The appropriateness, correctness and congruence of the skills will be assessed.
(c) The appropriateness, correctness and congruence of the skills will be evaluated.

In expository mode, students should:
(a) Use formal language and discipline-specific vocabulary correctly;
(b) Write logically and with a clear structure;
(c) Link different topics by finding common points and establishing a coherent overall design, i.e. taking care of structure, organisation and logical connections;
(d) Use their subject's own symbolism and graphic expression to summarise ideas, notions and concepts, in the form of, for example, formulae, diagrams, equations.
The candidate must demonstrate the following relational qualities:
(a) willingness to exchange and interact with the teacher during interactive lectures and possible interviews;
(b) critical spirit;
(c) ability to self-evaluate;
(d) ability to work in a group.
The grading scheme is as follows:
a) Sufficient (from 18 to 20/30)
The candidate demonstrates limited acquired notions, a superficial level of understanding, and many gaps. They have modest, but nevertheless sufficient, expressive abilities; logical abilities and consequentiality in the connection of topics of an elementary level.
b) Fair (21 to 23)
The candidate shows a discrete acquisition of concepts, but little depth, a few gaps; more than adequate argumentative ability; acceptable command of academic language; logical ability and reasoning in the context of topics of moderate complexity.
c) Good (24 to 26)
The candidate demonstrates a reasonably broad knowledge of the subject, with moderate depth and some gaps; satisfactory ability to express oneself; dialogue and critical thinking are well

developed; good ability to synthesise and more than acceptable ability to express oneself graphically.
(d) Outstanding (27 to 29)
The candidate demonstrates a broad and deep knowledge of the subject with marginal gaps; remarkable expressive ability and a high command of academic language; remarkable ability to engage in dialogue, good competence and a relevant ability to synthesise.
(e) Outstanding (30)
The candidate demonstrates a very broad and deep knowledge of the subject; high expressive ability and command of scientific language; excellent dialogue skills, ability to make connections between different topics; excellent ability to synthesise and a high level of graphic literacy.
Honours or distinctions are awarded to candidates who are clearly above average, with no conceptual, expressive, conceptual or logical limitations.

-Reference texts:
Bellini (Chimica Medica e Propedeutica Biochimica) Zanichelli
Bettelheim, Brown, Campbell, Farrell (Chimica e Propedeutica Biochimica) Edises
Binglia, Giardina (Chimica e Propedeutica Biochimica) McGraw-Hill
Denniston, Topping, Caret (Chimica generale, Chimica organica, propedeutica Biochimica) McGraw-Hill

INTEGRATED COURSE: COMMUNICATION AND MEDICAL HISTORY

(4 CFU – 40 hours)

– Prerequisite:
NONE

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
through the ' education to the " whole person medicine", the general objective of the course is to develop the skills (theoretical, practical and methodological) related to communication, to analyze the different interpersonal situations and to read the fundamental mechanisms, putting the basis for the training of a doctor with a biomedical- psycho-social culture who shows a multidisciplinary and integrated vision of the most common problems of health and disease, centered not only on the disease, but on the patient, considered in his totality of body and psyche within the social context. In order to acquire "knowing how to be" in the professional activity and, in particular, in the approach with the patient, the student must get to know and understand: the historical evolution of the concepts of health, disease, assistance and organization health; the historical evolution of the relationship between religion and assistance and those between science and medicine; the historical evolution of biomedical research: basic research and applied research.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
The student must be able to apply effective interpersonal communication strategies depending on the different relational and context situations, choosing the most correct words and managing his own verbal, non-verbal and paraverbal communication.
AUTONOMY OF JUDGEMENT:

At the end of the course the student must be able to autonomously interpret communicative situations in the professional field and read the underlying mechanisms.
COMMUNICATION SKILLS:
The student must be able to communicate effectively depending on the key factors of interpersonal communication: recipient, context, message.
ABILITY TO LEARN:
The student will develop an analysis and decision methodology which, starting from the cases examined in the course, can also be extended to other situations and circumstances. Development of communication skills, in particular related to relational and interpersonal communication . Good capacity for human contact (communication skills), listening, interacting with patients, caregivers and colleagues.

-Contents:
DIDACTIC UNIT: NN - CLINICAL COMMUNICATION (2 CFU – 20 hours)
Skills for communicating with patients; models doctor / disease-centered and patient -centered; reporting bad news; the emotions of the patient, the care givers and the healthcare professional; stress and burn -out; the dying patient and the notification of death; the quality of life linked to the state of health.
DIDACTIC UNIT: NN - HEALTH COMMUNICATION (1 CFU – 10 hours)
The course is divided into four general items: 1) The relational communication 2) The secrets of effective communication 3) Communication and Medicine
DIDACTIC UNIT: MED/02 - MEDICAL HISTORY (1 CFU – 10 hours)
Introduction and course overview. The history of Greek, Roman and Islamic medicine. The medicine during the Middle Ages. The medicine from the 13th to the 16th century. The medicine during modern and the contemporary age. Advancements of medical technologies and therapeutics, and its consequences. The evolution of medical thinking. How better research generate a better healthcare.

-Didactic methods:
Lectures will be face-to-face and, in accordance with university regulations, and may also be in mixed mode. Students will be involved in the analysis of case studies. If the epidemiological situation allows, simulations may also be used.

-Modalities of learning verification:
Registration for the examination sessions will be carried out by logging onto ESSE3.
Students must have attended at least 70% of the total face-to-face lectures and at least 70% of each module, as well as all the hours scheduled for the professional activity, to be eligible to sit the examination.
The examination will consist of a written test with multiple choice and open questions.
Each question will be worth one point, with a total of thirty points available. A minimum of 18 points is required to pass.
Exams will be marked during the periods specified in the C.L. Teaching Calendar. Examination instructions

-Reference texts:
Clinical communication
Moja, Vegni. La visita medica centrata sul paziente. Raffaello Cortina Editore; Milanese e Milanese. Il tocco, il rimedio, la parola. Ponte alle Grazie Editore; Silverman, Kurtz, Draper. Competenze per comunicare con i pazienti. Piccin;
Buckman. La comunicazione della diagnosi in caso di malattie gravi. Raffaello Cortina Editore

Gilligan T, Bohlke K, Baile WF. Patient-Clinician Communication: American Society of Clinical Oncology Consensus
Guideline Summary. J Oncol Pract. 2018 Jan;14(1):42-46.
Health communication
-Elisabetta Gola, Fabrizio Meloni, Riccardo Porcu, Comunicare la salute. Metodi e buone pratiche per le amministrazioni, Carocci, 2018.
- Elisabetta Gola e Patrizia Mottola, Public Speaking. Il ritorno della comunicazione vocale nell'era della comunicazione digitale, Meltemi, 2019 [anche in formato ebook].
Medical History
http://pacs.unica.it/biblio/storia.htm

BASICS OF COMPUTER SCIENCE

(2 CFU – 50 hours)

– Prerequisite:
The proposed programme will enable students who have not previously matured disciplinary knowledge to achieve the stated learning objectives. There are no prerequisites.

- Learning objectives:

The student must gain a solid grasp of the fundamentals of computer systems and their applications, as well as the logic of the web.
The student must be able to apply their knowledge and understanding by choosing and using the main computer operating systems in their professional activity. They must be able to create text documents and spreadsheets and insert text and non-text content in them. The student must be able to use digital tools to research a text or a scientific article independently.

Autonomy of judgement
The student will be able to employ autonomy of judgement to analyse and evaluate complex data, including statistical information relating to a specific pathology or rehabilitation technique. The student will evaluate the appropriateness of computer tools in a professional context and assess the appropriateness of data and approaches to their processing for solving data processing problems.
Communication skills
The student must be able to communicate in a professional manner, including the use of correct technical terminology where necessary. The student will be able to describe how to solve data processing problems.
The student must be able to bridge any gaps in their use of digital tools. He/she must develop the learning ability required to undertake studies at the next level (2nd level degree).

-Contents
INFORMATICS (CFU 2 - 16 hours)
This course will teach you about data and information, the concepts of hardware and software, the basics of operating systems and networking, computer and health information systems, computer security, and the basic functionality of calculation and dataset management programmes. You will also learn how to prepare datasets, analyse data, and create reports with

the use of graphs. Finally, you will gain hands-on experience using programmes dedicated to operations and basic analysis of datasets.

-Didactic methods

-Modalities of learning verification:
The test is a formative verification model of basic IT skills. It is an in-person examination with automatically corrected multiple-choice questionnaires. Students who pass the Placement Test will have automatically acquired the prescribed credits.

-Reference texts:
To be defined

PHYSICS

(5 CFU – 50 hours)

– Prerequisite:
Elementary Mathematics and Physics (as taught in high schools)
Physical quantities and the systems of measurement. Kinematics and Dynamics of point particles. Work and energy. Static of fluids. Thermology, ideal gas law, 1 e 2 principle of thermodynamics. General phenomena in acoustic and optics: reflection, refraction, simple lenses and mirrors. Introduction to electrostatic and electrodynamic: Coulomb law, electric field and potential, capacitors, elementary circuits, continuous currents, electrical resistance, Joule effect, power generator.
Natural, integer, rational and real numbers and their operations. Order of magnitude and scientific notation. Proportions and percentages. Power with integer and rational exponent and their properties. Logarithm (10 and e base) and their properties. Algebraic expressions and polynomials. Equations and inequalities of first and second degrees. Elementary functions and their graphical representation.
Polygons, circumference and circle, sphere and spherical surfaces. Angles in degree and radians. Sinus, cosinus and tangent, trigonometric equations and application to right triangles. Cartesian coordinates in two and three dimensions. Equation of a straight line. Probability, frequency and average value.

- Learning objectives:
AUTONOMY OF JUDGEMENT
Development of the capacity for autonomy through the habit of applying basic physics concepts and techniques to biological and biomedical problems. Acquiring the ability to critically evaluate the physical models used, identifying their descriptive limitations and operational advantages.
COMMUNICATION SKILLS
Ability to correctly describe the physical principles underlying a phenomenon of a biological and biomedical nature, presenting in a clear and rigorous manner the hypothesised model, the mathematical procedure used and the results obtained. Being able to communicate the arguments in modern scientific language.
ABILITY TO LEARN:
Ability to deepen, not in a notional form but with a critical and quantitatively founded approach, the concepts exposed during the course, also through the study of different texts.

-Contents

FIS/07 - PHYSICS (5 CFU – 50 hours)

BASIC CONCEPTS:

Basic concepts in mathematics and physics; derivatives and integrals: link to physical quantities; vectors, scalar product and dot prodcut.

MECHANICS OF RIGID BODY AND MECHANICS OF FLUIDS:

Rigid body: equilibrium conditions, translational and rotational motions; Levers in human body and fracture.

Dynamics of perfect fluids. Dynamics of real fluids: laminar and turbulent flow. Resistance and Poiseuille law. The human cardiovascular system.

THERMODYNAMICS:

Internal energy and enthalpy. Thermodynamic cycles, thermal machines and performance. Entropy, free energy and work. Conditions for spontaneous evolution of systems.

ELECTRICAL AND MAGNETIC PHENOMENA:

Properties of insulators and conductors. Charge-discharge of a capacitor. Introduction to magnetic fields generated by currents and permanent magnets. Effect of magnetic field on currents and charges. Magnetic induction phenomena and self-induction.

OSCILLATORY PHENOMENA:

Propagation of waves. Stationary waves. Doppler effect. The undulatory theory of optics. The hearing apparatus and ultrasounds. The eye and its defects. Magnification and resolving power of optical instruments.

Optical systems for the correction of vision defects, ultrasound systems for therapy and diagnosis.

PHYSICS OF RADIATIONS:

Nuclear decays. X ray. Principles of dosimetry. Radiation damage.

-Didactic methods

You will be expected to attend lectures, complete exercises, take in-class and home self-assessment tests.

As previously stated, the frontal lesson comprises several stages of student involvement. In particular, the students discuss the summary of the previous lesson in groups. One group then illustrates its conclusions and submits them to the other groups and the teacher. The exercise takes an average of 5-7 minutes at the start of the lesson. During the lesson, questions or short problems will be posed, and the answers will be worked out by individual students or in groups.

The curriculum is structured around approximately 10 hours of scheduled tutorials, with each topic including the discussion of examples.

The teaching will be delivered predominantly face-to-face, with online strategies used to augment it. This approach ensures the teaching is innovative and inclusive.

-Modalities of learning verification:

The assessment procedure is based on:

-one compulsory written examination/test on the topics of the course;

-two ongoing written tests on fundamental physics topics, as an alternative to the examination test mentioned in the previous point.

The overall grade out of 30 takes into account:

Quality of knowledge, mathematical skills, skills possessed and/or demonstrated:

(a) appropriateness, correctness and congruence of knowledge

(b) appropriateness, correctness and congruence of skills

(c) appropriateness, correctness and congruence of skills

Expository quality:

(a) Expressive ability;
b) Appropriate use of language specific to the subject;
c) Logical ability and ability to connect different topics by finding common points and establishing a coherent overall design, i.e. focusing on the structure, organisation and logical connections in expository discourse;
d) Ability to synthesise.
The grading scale is as follows:
a) Sufficient (from 18 to 20/30)
The candidate demonstrates few acquired notions, many gaps, modest expressive abilities, but sufficient to elaborate a coherent text; logical abilities and consequentiality in the connection of topics at a superficial level; limited ability to synthesise and express graphically.
b) Fair (21 to 23)
The candidate shows discrete acquisition of notions, but little in-depth study, a few gaps; the candidate demonstrates a fairly in-depth knowledge of the subject, with small gaps; satisfactory expressive abilities and good command of scientific language; a well-characterised critical spirit; good synthesis and graphical expression skills.
c) Good (24 to 26)
The candidate demonstrates a fairly in-depth knowledge of the subject, with minor gaps. They have satisfactory expressive abilities and good command of scientific language. They also have a well-characterised critical spirit, good synthesis and graphical expression skills.
d) Excellent (27 to 29)
The candidate demonstrates a very broad and well-in-depth knowledge of the subject, with few marginal gaps. They have remarkable expressive abilities and mastery of scientific language. They also have a high critical spirit, good competence and relevant aptitude to identify connections between different topics. They have high synthesis and graphic expression abilities.
e) Excellent (30)
The candidate has an extensive and equally in-depth body of knowledge, as well as high expressive ability and considerable mastery of the scientific language. They demonstrate excellent ability to synthesise, strong ability to make connections between different topics, and great familiarity with graphic expression. Any gaps are of little impact.
Honours (distinctions) are awarded to candidates who are clearly above average and whose shortcomings are irrelevant.

EXAMINATION INSTRUCTIONS
You must register for the examinations via the online procedure (ESSE3).

-Reference texts:
The topics covered in the course are those generally developed in any university textbook for students of Medicine or Biology. Normally such texts also contain references to the fundamentals of elementary physics and mathematics.
The following texts will be useful:
G. Bellini, R. Cerbino, G. Manuzio: Fisica per medicina con applicazione fisiologiche, diagnostiche e terapeutiche
(Piccin-Nuova Libreria 2018)*;
D. Scannicchio: Fisica Biomedica (EdiSES, Napoli 2009)*. J.S. Walker:
Fondamenti di Fisica (Zanichelli, Bologna, 2005)
U. Gasparini, M. Margoni, F. Simonetto: Fisica, vol. 1 e 2 (Piccin, Padova, 2020)

1 YEAR 2 SEMESTER

INTEGRATED COURSE: ANATOMY 1

(4 CFU – 40 hours)

– Prerequisite:
Knowledge of Cytology, Histology, and Biochemistry, as defined by the rules set by the Degree Course.

- Learning objectives:
To familiarize Students with:
The structural organization and the normal functioning of the human body, as a starting basis for her/his understanding of main pathological alterations, as well as the discussion of clinical aspects and diagnosis;The integrated working of the locomotor system and its different parts in the maintenance of body balance and posture, and in the operation of movement.
The ability to outline and discuss major topics concerning the locomotor system and the peripheral nervous system, as listed in the course Contents.
KNOWLEDGE AND UNDERSTANDING:
Acquisition of critical tools and familiarity with issues related to the general organization of the locomotor system, and the peripheral nervous system, their component parts and integration, their functional anatomy, and basic clinical anatomy.
AUTONOMY OF JUDGEMENT:
Teaching will aim at letting students develop an acceptable ability to critically address and discuss the various topics covered in the course.
COMMUNICATION SKILLS:
Acquisition of the ability to describe in an essential, but appropriate way the component parts of the locomotor and peripheral nervous systems, and the relationships between such parts in the body. Use of specific language (nomenclature and terminology) in an appropriate, autonomous and meaningful way. Demonstration of understanding of acquired knowledge through oral communication and graphic representations.
ABILITY TO LEARN:
Essential theoretical knowledge of the structure of bones, joints and muscles, and the peripheral neurons and nerves, as acquired from advanced academic-level textbooks, and in a few cases from publications in international journals as a way to further and update the student's knowledge.

- Contents:
DIDACTIC UNIT: BIO/16- HUMAN ANATOMY 1 (4 CFU – 40 hours)
External and surface anatomy. Anatomical position of reference, lines and planes, anatomical terminology. Regions and body cavities.
LOCOMOTOR SYSTEM:
Organogenesis. Classification of bones and joints. Synovial joints: classification and movements. For some joints (as specified below) an analytical study is required: description of articular surfaces, articular capsule, reinforcing ligaments, movements, relationship with muscles.
Classification of skeletal muscles, agonist and antagonist muscles, muscle fasciae and lodges. For some muscles (as specified below) an analytical study is required: description of origin, insertion, location, action.
Skull: Bones of the brain-skull and face. Hyoid bone. Cranial, temporal, infratemporal and

pterygopalatine fossae. Orbital, nasal, paranasal, buccal cavities. Analytical study of the temporo-mandibular joint and masticatory muscles. Overview on mimic muscles.
Trunk: vertebral column; general and distinctive characteristics of the vertebrae. Thoracic cage; ribs and sternum. Analytical study of the intervertebral, cranio-vertebral, and costo-vertebral joints. Fasciae of the neck, thorax, back, abdominal wall. Nomenclature and relationships of spino-appendicular and spino-costal muscles. Analytical study of the muscles sternocleidomastoid, scalene, suprahyoid, infrahyoid, trapezius and latissimus dorsi. Overview on the prevertebral and deep back muscles. Intrinsic muscles of the thorax. Analytical study of the muscles pectoralis major and minor, serratus anterior, diaphragm; rectus and transversus abdominis, internal and external oblique, iliopsoas, quadratus lumborum. Inguinal canal. Perineum.
Upper limb: characteristics of scapula, clavicle, humerus, ulna and radius. Nomenclature and position of the bones of the hand. Overview on the joints of the shoulder girdle and of the hand. Analytical study of the shoulder, elbow, radioulnar, and radiocarpal joints, of the shoulder and arm muscles. Nomenclature of the forearm muscles (location in the muscle lodges and action of the groups of muscles) and of the hand muscles. Axillary cavity. Cubital fossa.
Lower limb: characteristics of the hip bones, femur, tibia and fibula, patella. Nomenclature and position of the bones of the foot. Pelvis. Overview on the joints of the pelvic girdle, talocrural and of the foot. Analytical study of the sacroiliac, hip, knee joints, of the hip and thigh muscles. Nomenclature of the leg muscles (location in the muscle lodges and action of the groups of muscles). Overview on the foot muscles. Femoral triangle and Hunter's canal. Popliteal fossa.
PERIPHERAL NERVOUS SYSTEM:
Organization and origin of spinal nerves. Spinal plexuses and their main branches, anatomical and functional aspects and basics on the course.

DIDACTIC UNIT: BIO/06 - ANATOMY INTERNSHIP (1 CFU – 25 hours)
orientate and describe bone structures
describe joint structures and their devices
describe muscle structures and their actions
describe the relationships between bone, joint and muscle structures in the context of different topographical regions
describe the course and innervation territory of spinal nerves. Know how to
acquire knowledge about the bone, joint and muscle structures of the regions of the human body, their spatial and anatomo-functional relationships
acquire knowledge about the course, functional distribution territories and injuries of spinal nerves. To be able to independently
orientate bone structures and detect their characteristics on osteological material and anatomical models
highlight the relationships between osteo-articular and muscular structures and discuss their functional and clinical aspects in the context of different topographical regions
discuss the anatomo-functional organisation of spinal nerves
use 3D anatomical imaging software.

-Didactic methods:
Teaching will be delivered face-to-face. Lectures will be supplemented with audiovisual materials and streaming to ensure their use in an innovative and inclusive manner.
The lecturer will facilitate classroom dialogue to ensure understanding of the topics covered and to address any doubts or perplexities about the information acquired.
The course will combine frontal and interactive teaching with the use of osteological material, anatomical models, anatomical imaging software, and in particular the interactive anatomical table, using virtual dissection technology.

The lecturer will be available for meetings and/or explanations upon request. Please send an email to arrange an appointment.

-Modalities of learning verification:
You must register for the examination via the telematic procedure (ESSE3).
You will find the examination dates on the Degree Course website.
If there are a large number of students registering for individual examination dates, their assessment will be scheduled over several consecutive days.
The final assessment/examination will be carried out by means of an interview. The student will have to discuss orally certain topics proposed by the lecturer concerning the organisation of the locomotor apparatus, its parts and their topographical and functional interactions, the peripheral nervous system, and applied aspects relating to movement and posture. The student may use graphical or schematic representations prepared at the time. The assessment will evaluate the quality of knowledge, the skills demonstrated, the use of appropriate terminology, the ability to express themselves, logical and synthesis skills, and the ability to link concepts and knowledge.
The assessment will consider the quality of the knowledge, skills and competences demonstrated. It will assess the appropriateness, correctness and congruence of the knowledge and skills presented.

Manner of expression:
expressive ability;
appropriate use of language specific to the discipline;
logical ability and consequentiality in making connections between content areas;
ability to connect different topics by finding common points and establishing a coherent overall design, i.e. paying attention to the structure, organisation and logical connections of the expository discourse;
ability to synthesise.
The examination is marked by a grade expressed in thirtieths. The test is passed if at least a mark of 18/30 is obtained.
The mark may be: Sufficient (18 to 20/30)
The candidate shows few acquired notions, superficial level, many gaps, modest expressive skills, but sufficient to support a coherent dialogue; logical skills and consequentiality in the connection of elementary level topics; poor synthesis and graphic expression skills; poor interaction with the teacher during the interview.
Discrete (21 to 23)
The candidate shows discrete acquisition of notions, but little depth, few gaps; expressive skills more than sufficient to support a coherent dialogue; acceptable mastery of scientific language; logical skills and consequentiality in the connection of topics of moderate complexity; more than sufficient ability to synthesise and demonstrate graphic expression.
Good (from 24 to 26)
The candidate shows a fairly broad range of notions, moderate depth with small gaps; satisfactory expressive ability and significant command of academic language; observable dialogue and critical spirit; good synthesis and graphic expression skills more than acceptable.
Excellent (from 27 to 29)
The candidate demonstrates a very broad, well-researched background with marginal gaps; remarkable expressive ability and high command of academic language; remarkable ability to engage in dialogue, good competence and relevant aptitude for logical synthesis; high level of synthesis and graphic expression.
Outstanding (30)

The candidate demonstrates a very wide and thorough knowledge, with some gaps; a high level of expression and a high command of academic language; excellent ability to interact, a marked ability to make connections between different topics; excellent ability to synthesise and a high level of familiarity with graphic expression.
Distinction is awarded to candidates who are clearly above average and whose notional, expressive, conceptual and logical limitations are, on the whole, irrelevant.

-Reference texts:
Anastasi G et al. - TRATTATO DI ANATOMIA UMANA-ANATOMIA UMANA TOPOGRAFICA - Edi-Ermes
Barone R et al. - ANATOMIA UMANA. Basato sul Prometheus - EdiSES
Cunningham's - TRATTATO DI ANATOMIA UMANA - Piccin
Moore KL, Dalley AF, Agur AMR - ANATOMIA UMANA A ORIENTAMENTO CLINICO - Casa Editrice Ambrosiana
Standring S - ANATOMIA DEL GRAY - Edra
Anastasi, Tacchetti - ANATOMIA UMANA. ATLANTE - Edi-Ermes Gilroy
AM et al. - PROMETHEUS. ATLANTE DI ANATOMIA - EdiSES Netter FH - ATLANTE DI ANATOMIA UMANA - Edra
Platzer W - ANATOMIA UMANA - ATLANTE TASCABILE - Vol. 1 Apparato Locomotore - Casa Editrice Ambrosiana
Schunke M et al. - PROMETHEUS. TESTO-ATLANTE DI ANATOMIA - Vol. 1 Anatomia generale e apparato locomotore – EdiSES
Waschke J, Paulsen F - SOBOTTA. ATLANTE DI ANATOMIA UMANA - Edra

INTEGRATED COURSE: BIOCHEMISTRY AND MOLECULAR BIOLOGY

(11 CFU – 110 hours)

– Prerequisite:
Basic scientific knowledge of Chemistry, Biochemistry, Biology and Genetics.

- Learning objectives:
Acquisition of the molecular and biochemical mechanisms underlying the life processes of cells and their metabolic activities through in-depth study of the structure-function relationships of biomolecules. The student should know the characteristics of biomolecules (carbohydrates, lipids, nucleotides, amino acids and proteins, vitamins) and their behaviour in biological systems, their properties and transformations. In particular, he/she should have knowledge of some proteins of biomedical interest by assessing their functional role. He/she will have to have knowledge of the main pathways of energy metabolism, their integration and regulation, in order to correctly interpret physiological and pathological processes at the molecular level, which is the objective of more advanced courses. The student will acquire knowledge of the structure and function of genes and genomes and the cellular processes associated with them, understand the importance of DNA analysis technologies in medicine and acquire the ability to use them as a tool for diagnosis and patient care. The student will be expected to describe the knowledge acquired during the course in clear, comprehensive and appropriate scientific language.
Knowledge and understanding:

Students are expected to know the structure of biomolecules, their reactivity and functions, and in particular the structure and physiological properties of myoglobin and haemoglobin. Also, to know the general functions of enzymes, their kinetic properties and the regulatory mechanisms of enzyme activity as well as to know the catabolic and anabolic pathways involved in energy metabolism and their compartmentalisation in organs and tissues of the human body. Further, understand the mechanisms regulating metabolism and the role of enzymes, mechanisms of inhibition and modulation of their activity. Gain an understanding of metabolic regulation at the cellular level and metabolic integration; understand biomolecular processes related to nucleic acids.
Application skills:
The student will be able to:
-Apply the chemical basis of the discipline to analyse the ways in which biochemistry and molecular biology can explain human health and disease, and use the knowledge acquired as a basis for the study of subsequent biological disciplines such as physiology and pathology.
-apply the acquired knowledge to understanding the structure-function relationship of biomolecules, to understanding the metabolic processes underlying the production and conservation of chemical energy and its transformations.
Autonomy of judgement:
The student will be able to discern between fundamental and supplementary topics, identifying the logical thread underlying the rational study of Biochemistry and Molecular Biology, avoiding the merely mnemonic acquisition of definitions, schemes, equations, graphs and chemical reactions;
Communication skills:
The student will be able to argue the course content using the formalisms, language and vocabulary typical of the discipline. He/she will interact with the lecturer by arguing the salient points of the syllabus with the necessary detail. Thanks to interactive lectures he/she will also be able to interact profitably with colleagues.
Ability to learn:
Interaction with the lecturer, self-assessment tests, and the teaching material (slides of lectures and exercises) will provide the student with the necessary tools for fruitful, reasoned and non-mnemonic learning of the disciplines.

-Contents:
BIOCHEMISTRY
Introduction to Biochemistry (biomolecules; water and weak interactions in aqueous systems).
Structure and function of carbohydrates (monosaccharides, disaccharides, polysaccharides; proteoglycans, glycoproteins, glycolipids).
Structure and function of lipids (fatty acids, reserve and membrane lipids, cholesterol; lipids with other biological activities; lipoproteins; fat-soluble vitamins).
Structure and function of amino acids and proteins (amino acids, peptide bonding, peptides, proteins; primary, secondary, tertiary and quaternary structure; alpha-keratin, collagen and elastin; myoglobin, haemoglobin and transport of oxygen and carbon dioxide; immunoglobulins).
Enzimi (holo/apoenzyme, coenzyme and cofactors; enzyme-substrate complex and active site; mechanism of action; factors influencing enzyme activity; elements of enzyme kinetics; classification; regulation of enzyme activity).
Structure and function of water-soluble vitamins and derived coenzymes.
Metabolism: general aspects (exoergonic and endoergonic reactions; catabolic and anabolic pathways; ATP and other high-energy compounds; control mechanisms of the main metabolic pathways and their integration).

Carbohydrate metabolism (glycolysis and gluconeogenesis; lactic fermentation, alcoholic fermentation and oxidation of pyruvic acid to acetyl-CoA; phosphate pentose pathway; glycogenolysis and glycogenosynthesis).
Lipid metabolism (digestion, mobilisation and transport of lipids; activation and transport of fatty acids in the mitochondrion; β-oxidation of saturated, unsaturated, even- and odd-numbered fatty acids; propionyl-CoA fate; formation and utilisation of ketone bodies; cholesterol and fatty acid biosynthesis).
Amino acid metabolism (general amino acid metabolism: transdeamination; carbon skeleton oxidation: glucogenic and ketogenic amino acids; fate of amino groups; urea cycle; decarboxylation of amino acids and production of biological amines).
Production and conservation of metabolic energy (citric acid cycle; oxidative phosphorylation: respiratory chain, electron transport and electrochemical gradient formation; ATP-synthase and utilisation of the proton gradient; shuttle systems).
MOLECULAR BIOLOGY
Structure of nucleic acids. DNA hybridisation, molecular probes.
Restriction enzymes, Southern blotting, Gene cloning
Enzymatic DNA amplification (PCR). DNA sequencing by Sanger and NGS methods. Point mutation detection methodologies.
Transcription and transcriptional regulation of gene expression in eukaryotes
mRNA maturation and regulation of gene expression
One gene many proteins: alternative splicing, promoter selection, translation initiation.
Epigenetic modifications, chromatin remodelling, DNA methylation
Monoallelic expression mechanisms
-Genomic imprinting, related diseases, molecular diagnosis
-X-chromosome inactivation
Allelic exclusion and the immune system: somatic differentiation and gene expression
Post-transcriptional regulation of gene expression: mRNA editing.
Cytoplasmic regulation of mRNA degradation. RNA interference.
Human genome sequencing: strategy and implications. DNA polymorphisms: use of minisatellites and microsatellites as polymorphic DNA markers, linkage analysis, GWAS, DNA databases, personal identification and paternity investigations. Genomics, proteomics, pharmacogenomics.

-Didactic methods:
BIOCHEMISTRY
Lectures: The course in Biochemistry is divided into two phases: the first part involves the discussion of the fundamental concepts of Structural Biochemistry with a description of the classes of biomolecules, their structure and function. The second part involves the description of the main metabolic pathways concerning energy metabolism, catabolic and anabolic pathways, control mechanisms and their integration.
Exercises: the exercises concern the completion of quiz tests with multiple choice questions, interpretation of graphs, recognition of structures of biomolecules and their function.
Tutoring: support in studying, carrying out exercises and tests.
MOLECULAR BIOLOGY
The Molecular Biology course consists of two phases: 26 hours of lectures and 4 hours of interactive teaching focusing on applications of molecular technologies in the medical sciences.

-Modalities of learning verification:
BIOCHEMISTRY
The acquisition of the objectives is verified by means of a written test (*in itinere* assessment) and a final interview. The *in itinere* assessment takes place during the course and includes multiple-

choice questions, identification of the structures of biomolecules, interpretation of graphs and exercises relating to the course content of the same type as those presented in the exercises.
The examination will be graded, and if sufficient, will count towards the final examination grade.
The examination whose grade is insufficient or unsatisfactory for the student may be repeated by means of an oral examination at the end of the course.
MOLECULAR BIOLOGY
The acquisition of the objectives will be verified by means of a final examination (oral or written).
The final mark, expressed in thirtieths, is obtained from the average of the marks obtained in the two Biochemistry tests (written test and oral examination or both) and in the Molecular Biology test (written or oral final examination).
The following will be assessed:
 quality of knowledge, skills and competences possessed (appropriateness, correctness and congruence)
 appropriate use of formalism and discipline-specific language
 logical ability and consequentiality of content, ability to connect different topics by finding common points and establishing a coherent overall design, i.e. focusing on structure, organisation and logical connections
 ability to synthesise (also through the use of the subject's own symbolism and the graphic expression of notions and concepts, in the form of formulae, graphs, diagrams, chemical equations)
 self-assessment skills, interaction with the teacher during interactive lectures and interviews, critical thinking.
The grading scheme is as follows:
Sufficient (18 to 20/30)
The candidate demonstrates few acquired notions, superficial level, many gaps. modest, but nevertheless sufficient expressive abilities; logical abilities and consequentiality in the connection of topics of elementary level.
Fair (21 to 23)
The candidate shows discrete acquisition of notions, but little depth, a few gaps; more than sufficient argumentative abilities; acceptable command of scientific language; logical abilities and consequentiality in the connection of topics of moderate complexity.
Good (24 to 26)
The candidate demonstrates a reasonably wide range of knowledge, moderate depth of understanding, with a few gaps; satisfactory expressive abilities; dialogue skills and critical spirit are well detectable; good synthesis skills and more than acceptable graphic expression.
Excellent (27 to 29)
The candidate demonstrates an extensive, well-in-depth knowledge of the subject, with only marginal gaps; remarkable expressive abilities and a high command of scientific language; remarkable dialogical ability, good competence and relevant aptitude for logical synthesis.
Excellent (30)
The candidate demonstrates a very wide and in-depth knowledge of the subject; high expressive ability and high mastery of the scientific language; evident facility to engage in dialogue, marked aptitude for making connections between different topics; excellent ability to synthesise and great familiarity with graphic expression.
Honours (distinctions) are awarded to candidates who are clearly above average, in the absence of notional, expressive, conceptual or logical limitations.

-Reference texts:
Biochemistry
Nelson-Cox; I Principi di Biochimica di Lehninger; Zanichelli
Voet-Voet-Pratt; Fondamenti di Biochimica; Zanichelli

Berg-Tymozcko-Gatto-Stryer; Biochimica; Zanichelli
Garrett-Grisham; Principi di Biochimica; Piccin
Mathews-Van Holden-Appling- AnthonyCahill; Biochimica; Piccin
Devlin; Biochimica con aspetti clinici; Piccin
Siliprandi & Tettamanti; Biochimica medica; Piccin
Molecular Biology
-Fondamenti di biologia molecolare, Allison LA, Zanichelli
-Genetica medica e umana, Neri G, Edra
-Biologia Molecolare, Amaldi F, Casa Editrice Ambrosiana
-Genomi 4, Brown A, EdiSES
-Biologia molecolare del gene, Watson JD, Zanichelli.

INTEGRATED COURSE: HISTOLOGY AND EMBRIOLOGY

(7 CFU – 85 hours)

– Prerequisite:
None

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
Knowledge of the structure and function of cells and extracellular structures that constitute the tissues of the human body; the processes of cell proliferation and differentiation and the involved molecular mechanisms, starting with precursors stem cells; histogenesis, renewal, repair and regeneration of tissue and the homeostatic mechanisms involved; the main methods for the study and recognition of cells and tissues; fundamental processes by which the human body achieves its organization during embryonic development.
AUTONOMY OF JUDGEMENT:
The course aims to stimulate an objective assessment of teaching, constantly offering students a comparison between what is learned in class and what they have learned through self-study, using the recommended books and other sources of information.
COMMUNICATION SKILLS
The student must be able to communicate the theoretical and practical knowledge learned during the course in essential, comprehensive way and with suitable medical language.

-Contents:
DIDACTIC UNIT: BIO/17 - HISTOLOGY AND EMBRIOLOGY (6 CFU – 60 hours)
Cytology. The cell membrane. Fluid mosaic model. Membrane transport and signal transduction. Functions of the membrane. Specializations and coatings of the apical, basal and lateral cell surface. Smooth and rough endoplasmic reticulum. Golgi. Endosomes. Lysosomes. Mitochondria. Nucleus. Flagellum, cilia and mechanisms of their movement. Cellular inclusions. Microtubules. Intermediate filaments. Microfilaments. Amoeboid movement. Static, stable and subject to renewal cell populations. Stem cells. Multipotency and unipotency. Histology. Epithelial tissues. Characteristics, embryonic origin and manners of renewal. Basement membrane. Interactions with the connective tissue. Covering tissues. Classification and localization of epithelia. Specializations of the epithelial cell surface. Exocrine and endocrine epithelia: classification, morphology, cytological characters, nature of the secretion, types of secretion and localization.

Connective tissue. General. Embryonic origins. Classification of connective tissues. Fibroblasts. Macrophages. Mast cells. Fat cells. Plasma cells. Leukocytes in the connective tissue. Collagen, reticular and elastic fibers. Proteoglycans, glycoproteins and other constituents of the amorphous (ground) intercellular substance. Connective tissue proper: loose, reticular, elastic, mucous and dense connective tissue. White and brown adipose tissue. Cartilage: general characteristics, classification, localization and growth. Bone: lamellar, nonlamellar, compact and spongy bone. Intramembranous and endochondral ossification. Bone growth and remodeling. Blood and lymph. Erythrocytes, leukocytes, platelets. Main aspects of the immune system. System of macrophages. Hematopoiesis. Lymphoid tissues. Muscle tissue: morphological, embryological derivation and relationship with the connective tissue. Cytological characteristics, ultrastructural and molecular features of different types of muscle tissue. Striated skeletal muscle tissue. Striated cardiac muscle. Cardiac conducting system. Smooth muscle tissue. Nerve tissue. Generalities. Embryonic derivations. Structural organization and ultrastructure of the neuron. Axonal flow and transport. Synapses. Conduction of nerve impulses. Myelin. Schwann cells. Satellite cells. Oligodendrocytes. Astrocytes. Ependyma. Microglia. Dorsal root ganglia and sympathetic ganglia. Structure of a nerve. Tissue engineering.

DIDACTIC UNIT: BIO/07 - HISTOLOGY AND EMBRIOLOGY INTERNSHIP (1 CFU – 25 hours)
In-depth knowledge of the use of the optical microscope and the most common histological techniques.
(B) Reading of microscope preparations of tissues and organs of the human body, favoring cases difficult to interpret such as problems related to section planes, artifacts and when preparation conditions (color, setting, etc.) are not optimal.
(C) Possibility for each student of using the microscope in the Microscopy room. A tutor or a teacher will be available for clarification. Histological preparations will be presented by teachers with projections. In addition to standard microscopes, microscopes fitted with camera connected to a PC for viewing and saving images will also be available. Students will acquire the images and review them on their PC. Recognition cards and computer tools will be available to the trainees for the study of the histological preparations.
(D) Availability of the virtual microscope on the UniCA smartzoom platform (https://unica.smartzoom.com/s8/login?redirect_to=https://unica.smartzoom.com/s8/) open to all UniCA students with their login credentials of ESSE3
(E) Frequency of the Histology laboratories in the division of Cytomorphology, Department of Biomedical Sciences to perform the practical session on how to make a microscopy slide.

-Didactic methods:
Frontal teaching
This comprises a cycle of lessons that address all the themes of the program.
Interactive teaching
comprising:
(A) Individual or group meetings with tutors and teachers.
(B) Teacher-student distance interactions on Moodle platform or other websites, with discussion forum open to all students enrolled in the course.
(c) Debate in the Classroom on the answers to the on-the-spot checks and verification.
Vocational training
This consists of:
(A) In-depth knowledge of the use of optical microscopy and the most common histological techniques.
(B) Microscopic reading of preparations of tissues and organs of the human body, giving priority to pictures which are difficult to interpret because of problems inherent in sectional planes, artifacts and conditions of preparation (staining, fixation, etc.) which are not optimal.

(C) Possibility for each student to use the microscope in the Microscopy classroom. A tutor or a teacher will be available for clarification. The preparations will be illustrated by the teachers with projections. In addition to normal microscopes, some microscopes will also be available with a camera connected to a PC for viewing and saving images. Students will be able to capture images and review them on their PCs. Trainees will be provided with recognition cards to study the preparations.
(D) Ability to use the virtual microscope on the unique smartzoom platform (https://unica.smartzoom.com/s8/login?redirect_to=https://unica.smartzoom.com/s8/) accessible to all students with individual Esse3 credentials
(E) Attendance in the laboratory of Histology, in the section of Cytomorphology of the Department of Biomedical Sciences, for the practical session on histological preparation.

-Modalities of learning verification:
Frontal teaching
This comprises a cycle of lessons that address all the themes of the program.
Interactive teaching
consisting of:
(A) Individual or group meetings with tutors and teachers.
(B) Interaction between teacher and student on the Moodle platform or other websites, with a discussion forum open to all students enrolled in the course.
(c) Plenary debate on responses to on-the-spot checks.
Vocational training
This includes:
(A) In-depth knowledge of the use of optical microscopy and the most common histological techniques.
(B) Microscopic reading of preparations of tissues and organs of the human body, giving priority to images that are difficult to interpret due to problems inherent in sectional planes, artifacts and preparation conditions (staining, fixation, etc.) that are not optimal.
(c) Possibility for each student to use the microscope in the microscopy class. A tutor or teacher will be available for clarification. The preparations will be illustrated by the teachers with projections. In addition to normal microscopes, some microscopes will also be available with a camera connected to a PC for viewing and saving images. Students will have the opportunity to capture the images and review them on their PCs. Trainees will be provided with recognition cards to study the preparations.
(D) Possibility to use the virtual microscope on the unique smartzoom platform (https///unica.smartzoom.com/s8/login"redirect_to=https:///Unica.smartzoom.com/S8/) accessible to all students with individual Esse3 credentials
(E) Participation in the laboratory of Histology, to the section of Cytomorphology of the Department of Biomedical Sciences, for the practical session on how to set up a histological preparation.
Overall, the examination test will be assessed according to the following criteria:
NOT eligible to pass: fundamental gaps in knowledge of the topics covered; limited analytical and synthesis skills, frequent generalizations.
18-20: knowledge of the topics barely sufficient to describe a minimum framework of content of the subject
21-23: Knowledge of the topics more than enough to frame, analyze and synthesize consistently the topics
24-26: Reasonable knowledge of topics combined with equivalent ability to analyse and synthesise with rigorous reasoning.
27-29: Extensive knowledge of the subject, demonstrating considerable ability to analyse and synthesise, with rigorous and specific language.

30-30: excellent knowledge and integration of topics. Remarkable skills of analysis and synthesis, enriched by a capacity for deep, detailed and original expression.
The final grade is the weighted average of the different tests.
Candidates who do not pass one or both of the in itinere tests must sit the oral test for the part of the programme related to the test found to be insufficient. From the September call, the examination will be oral and will cover all the topics of the programme.
The quizzes of the in itinere exams give a total of thirty points. The results of the quizzes will be taken into account together with the results of the microscopy examination for the assessment of the final grade.

-Reference texts:
HYSTOLOGY:
Ross - Pawlina, Istologia. Testo e Atlante (Casa Editrice Ambrosiana) Autori vari, Istologia di V. Monesi (Piccin)
Mattioli Belmonte et al., Istologia Umana (Idelson-Gnocchi)
Gagliano, Eserciziario di Istologia. Piccin
All UNICA students can access the smartzoom virtual microscope
(https://unica.smartzoom.com/s8/login?redirect_to=https:/unica.smartzoom.com/s8/
It is recommended that you also use other resources available online (atlases, virtual microscopes, etc.):
www.histologyguide.org http://www.mbfbioscience.com/iowavirtualslidebox
http://medpics.ucsd.edu/index.cfm?curpage=main&course=hist
https://histology.medicine.umich.edu/full-slide-list
EMBRIOLOGY:
M De Felici et al., Embriologia Umana Piccin
Barbieri - Carinci, Embriologia - Terza edizione Casa Editrice Ambrosiana
Autori vari, Embriologia Umana (Idelson Gnocchi)
Moore K.L., Persaud T.V.N.: Lo sviluppo prenatale dell'Uomo (EdiSES) Sadler: Embriologia Medica di Langman (Masson).
W.J. Larsen: Embriologia Umana (Edra)

INTRODUCTORY INTERNSHIP RISK MANAGEMENT ASSESSMENT

(1 CFU – 16 hours)

-Prerequisite:
None

-Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
- Preventive Hygiene Sciences;
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
- Integrate knowledge and skills by applying legislation relating to safety and
control of risks in their working environment with particular reference to biological, chemical, infectious and radioactive risk biological, chemical, infectious and radioactive risk and adopting behaviour in compliance with the professional profile, the legislation governing the profession, the code of ethics
AUTONOMY OF JUDGEMENT:

- identify critical points in the organisational context or in diagnostic techniques, propose solutions by applying the best evidence in full compliance with the rules of the code of ethics.
COMMUNICATION SKILLS
- know how to communicate information, problems and solutions to the staff of the structures in in which they work. He/she must also be able to present problems techniques and scientific results at conferences, conventions, working groups, training courses training courses etc.
ABILITY TO LEARN
- knowledge of professional training programmes and learning skills which are necessary for a laboratory technician to keep up to date with regard to developments in science and technology.
- methodologies for paper and on-line bibliographic research and critical evaluation of scientific and professional literature in both Italian and English

- Contents:
INTRODUCTORY INTERNSHIP RISK MANAGEMENT ASSESSMENT (1 CFU– 16 ore)
General part
concepts of risk, damage, prevention, protection. organisation of company prevention, rights, duties and sanctions for the various company actors, supervisory, control and assistance bodies.
Specific part
Accident risks, General mechanical, General electrical, Machinery, Equipment, Falls from height. Explosion risks, Chemical risks, Mists - Oils - Fumes - Vapours - Dusts, Labelling, Carcinogenic risks, Biological risks, Physical risks, Noise, Vibration, Radiation, Microclimate and lighting, Videotherminals, PPE Work organisation, Work environments, Work-related stress, Manual handling of loads, Handling of goods (lifting equipment, means of transport). Signs, Emergencies, Safety procedures with reference to the specific risk profile, Escape and fire procedures, Organisational procedures for first aid, Accidents and near misses, Other risks.

-Didactic methods:
Lectures in the classroom; compulsory attendance of 90% of the hours

-Modalities of learning verification
15 multiple choice quiz.
Questions with 3 answer options of which only 1 is correct.
The exam is passed by correctly answering at least 8 out of 15 questions.

-Reference texts
The study material will be provided by the teacher in class

INTRODUCTORY CLERKSHIP 1

(1 CFU – 25 hours)

– Prerequisite:
NONE

- Learning objectives:
Knowledge and Understanding:
The student must demonstrate in-depth knowledge and advanced comprehension skills in basic medical sciences, clinical specialities and diagnostic and therapeutic techniques.
They must be able to relate this knowledge to clinical practice, applying theoretical principles to the diagnosis and management of patients.
Applying Knowledge and Understanding
The student must be able to apply theoretical knowledge to clinical practice effectively and confidently.
They must be able to perform clinical examinations, interpret diagnostic results, formulate differential diagnoses and plan appropriate treatments.
They must be able to handle medical emergencies and operate autonomously and under supervision.
Making Judgments:
The student must develop the ability to make clinical decisions in an independent and informed manner.
They must be able to critically evaluate scientific literature and clinical guidelines to integrate the best available evidence into practice.
They must demonstrate ethical and deontological analysis skills in medical decision-making.
Communication Skills:
The student must possess excellent communication skills to interact effectively with patients, their families and healthcare colleagues.
Students must be able to explain medical conditions, treatment options and associated risks in a clear and understandable manner.
They must demonstrate empathy, cultural sensitivity and the ability to work in multidisciplinary teams.
Learning Skills:
The student must develop autonomous and continuous learning skills in order to constantly update his or her medical knowledge and skills.
They must demonstrate the ability to critically reflect on their clinical practice and identify areas for improvement.
They must be motivated to participate in continuing education courses, conferences and other professional educational activities.

-Contents
Organisation of work in the ward and outpatient clinic: professional figures, competences and specific and common objectives.
Conduct of activities on the ward: hygiene rules, social and antiseptic hand washing; correct use of personal protective equipment;
standard precautions and insulation;
use of secure devices;
disposal of hazardous waste
Control and surveillance of invasive devices, hygiene management of the dressing cart, surgical instruments and the environment;
Microclimate control.

Patient acceptance, care of privacy, communication and information.
Exercise in collecting patients' anamnesis.
From anamnesis to medical record compilation: interactive simulation of medical record compilation.
Measuring blood pressure, heart and respiratory rate, peripheral pulse and saturation.
Blood glucose measurement.
Simulation of the following basic procedures
Positioning the patient in bed: supine, prone, Fowler (orthopnoic), semi-Fowler (semi-orthopnoic), Trendelemburg and anti-Trendelemburg, semi-prona (Sims), lateral and orthostatic.
Peripheral venous sampling and cannulation and management of intravenous therapy.
Intramuscular and subcutaneous injection
Aerosol and oxygen therapy.
Haemogas analysis.
Placement and management of the naso-gastric tube.
Bladder catheterisation.
Dressing of surgical wounds.
Performing the electrocardiographic examination.
Pharyngeal gold swab execution.
Performing Urotest.

-Didactic methods
Simulated practical activity in the advanced medical simulation centre.

-Modalities of learning verification:
Certification and evaluation of attendance is carried out by the appointed tutor who
will issue a formal certificate of attendance;
the tutor will also give an opinion on the progress of the traineeship;
and issue evaluation of the results related to the competences demonstrated.

-Reference texts:
To be defined

2 YEAR 1 SEMESTER

HUMAN ANATOMY 2

(7 CFU – 70 hours)

-Prerequisite:
Knowledge of cytology, histology, general biology, gross anatomy of locomotor system.

-Learning objectives:
It is expected that at the end of the course and relevant exam the student has acquired:
- basic knowledge of the systematic and topographical organization of the surface and microscopic structure of the organs and apparatuses of the human body from a future medical, clinical and surgical perspective;
- knowledge and understanding of the major functions and significance of these systems from a from a future medical, clinical and surgical perspective;

-ability to communicate effectively and adequately terminology on the topics of the course, and to address questions and needs of deepening independently;
- ability to expand acquired knowledge with sufficient autonomy, as a basis for further medical, clinical and surgical subject studies and their diagnostic and therapeutic approaches and methods.
KNOWLEDGE AND UNDERSTANDING
The student must acquire knowledge and understanding of the surface anatomy and microscopical structure of the organs that make up the different systems of the human body (cardiovascular, lymphatic, respiratory, digestive, urinary, genital, endocrine, integumentary) functional interactions between organs and between apparatuses, their organogenesis with a pre-clinical approach. The student will also demonstrate its mastery of the anatomical basis which will form the basis for future medical, clinical and surgical developments.
AUTONOMY OF JUDGEMENT:
The lessons will be set in order to allow students to acquire the ability to critically evaluate the knowledge of the topics covered.
COMMUNICATION SKILLS:
The student must have acquired the ability to describe in an essential, organized and complete way, and with adequate lexicon, the organization of the organs and apparatuses of the human body and the immediate relations between morphology and functional activity, also in relation to vascularisation, lymphatic drainage and innervations. Use of specific language (nomenclature and terminology) in an appropriate, autonomous and meaningful way. Demonstration of the understanding of the knowledge learned through oral communication and graphic representations.
ABILITY TO LEARN:
Essential theoretical knowledge of the structure of the organs that make up the cardiovascular, lymphatic, respiratory, digestive, uropoietic, genital, endocrine and integumentary systems acquired from advanced academic-level textbooks and in a few cases from publications in international journals as a way to further and update the student's knowledge.

-Contents:
BIO/16 - HUMAN ANATOMY 2 (7 CFU – 70 hours)
Teaching Unit: CARDIOVASCULAR SYSTEM
Embryology notes and organogenesis. Morpho-functional and microscopic characteristics of arteries, veins and capillaries. Macro- and microscopic anatomy of the heart (surface anatomy, relations of the heart in the mediastinum, structure, conductive system, vascularization and innervation) and pericardium. Surface anatomy of the arteries and veins of the general and pulmonary circulation and main branches of the aorta, coronary, anonyma, carotid, subclavian, axillary, brachial, radial, ulnar, celiac, mesenteric, renal, spermatic, iliac, femoral, popliteal, tibial and cardiac veins, sup. and inf. vena cava, anonymous, subclavian, int. jugular, axillary, azygos, iliac, femoral, superficial and deep venous circulation of the upper and lower extremities, chest and abdomen, portal vein and portosystemic anastomoses; origin and course of pulmonary arteries and veins. Functional circles (portal circles, arterial and venous rete mirabile). Lymphatic circulatory system: general aspects and topography of lymphatic drainage; macro- and microscopic functional anatomy of lymphoid and hematopoietic organs (bone marrow, thymus, spleen, lymph nodes).
Teaching units: SPLANCNOLOGY AND PERIPHERAL NERVOUS SYSTEM
RESPIRATORY SYSTEM. macro and microscopic anatomy of the upper and lower airways (nasal cavities, paranasal sinuses, larynx, trachea, bronchuses), lungs and pleures.
DIGESTIVE SYSTEM. Organogenesis; macro and microscopic anatomy of the oral cavity, salivary glands, pharynx, esophagus, stomach, intestine, liver, extrahepatic biliary tracts and gallbladder, pancreas. Peritoneum: organization.

URINARY TRACT. Organogenesis; macroscopic anatomy and microscopic structure of kidney, calycesand renal pelvis, ureters, urinary bladder, male and female urethra.
REPRODUCTIVE SYSTEM. Organogenesis; macro and microscopic anatomy of the gonads, genital tracts and external genital organs in the male (testis, epididymis, deferent duct, seminal vesicles, prostate, bulbourethral glands, testes and their coverings, spermatic cord, penis) and in the female (ovary, uterine tube, uterus, vagina, vulva). Perineum.
ENDOCRINE SYSTEM. Organogenesis; macro and microscopic anatomy of thyroid, parathyroid, adrenal, pituitary.
INTEGUMENTARY SYSTEM: general information and microscopic structure of the integument, the cutaneous appendages (nails, hairs, sudoriferous glands, sebaceous glands) and the mammary gland.
PERIPHERAL NERVOUS SYSTEM: Real and apparent origin, components and course of all cranial nerves.

-Didactic methods
Lectures are exclusively face-to-face. Teaching interaction methods and techniques in the presence of the lecturer. Lecturer-facilitated classroom dialogue aimed at understanding the topics covered.
At the end of the course, but also at the end of each lecture, there will be sufficient time to consolidate the information acquired and to deal with doubts and uncertainties, as well as exercises using histological preparations on slides (microscopy classroom) and through the use of Anatomage.

-Modalities of learning verification
The final assessment/examination will be carried out by means of a written examination and an interview. The written examination will consist of multiple-choice or open-ended questions. During the interview, the student will have to carry out the organ diagnosis, which consists of recognising a histological preparation under an optical microscope, and discussing orally some topics proposed by the lecturer.
The quality of knowledge, the skills demonstrated, the use of appropriate terminology, the ability to express oneself, the ability to reason and synthesise, and the ability to link concepts and knowledge will be assessed.
The final mark is expressed in thirtieths. To pass the test, a mark of at least 18/30 is required. The final score takes into account
The quality of the knowledge, skills and competences held and/or demonstrated:
a) adequacy, accuracy and congruence of knowledge b) adequacy, accuracy and congruence of skills
(c) adequacy, correctness and congruence of skills
Mode of expression:
a) Expressive ability
b) appropriate use of discipline-specific language
c) Logical ability and consistency in linking content;
e) Ability to link different topics by finding common points and creating a coherent overall design, i.e. paying attention to the structure, organisation and logical connections of expository discourse;
f) the ability to synthesise.
The marking scale is as follows:
(a) Sufficient (18 to 20/30)
The candidate demonstrates few acquired notions, superficial level, many gaps. Modest expressive abilities, but nevertheless sufficient to sustain a coherent dialogue; logical abilities

and consequentiality in the connection of topics of elementary level; poor synthesis abilities and rather limited graphic expression skills; little interaction with the teacher during the interview.
b) Fair (21 to 23)
The candidate demonstrates discrete acquisition of notions, but limited in-depth study, some notable gaps; more than sufficient expressive ability to sustain a coherent dialogue; acceptable command of scientific language; logical ability and consequentiality in the connection of topics of moderate complexity; more than sufficient ability to synthesise and acceptable graphic expression.
c) Good (24 to 26)
The candidate demonstrates a reasonably wide range of notions, moderate depth of knowledge, with small gaps; satisfactory expressive abilities and significant mastery of scientific language; dialogue skills and critical spirit are well detectable; good ability to synthesise and more than adequate graphic expression.
d) Very Good (da 27 a 29)
The candidate demonstrates an extensive, in-depth knowledge base, with marginal gaps; remarkable expressive abilities and a high command of scientific language; remarkable dialogical ability, good competence and relevant aptitude for logical synthesis; high synthesis and graphic expression skills.
e) Excellent (30)
High expressive abilities and a high command of scientific language; excellent dialogue skills, aptitude for making connections between different topics; excellent ability to summarise and great familiarity with graphic expression graphics.
Honours are awarded to candidates who are clearly above average, and whose notional, expressive, conceptual or logical limitations are on the whole irrelevant.

-Reference texts
To be defined

HUMAN PHYSIOLOGY

(9 CFU – 90 hours)

-Prerequisite:
Knowledge of Physics and Biochemistry

-Learning objectives:
The purpose of General Physiology course i to present the fundamental mechanisms of animal physiology. In particular, the course is devoted to basic cellular physiology, to analyze the coordinated body functions and the integrative mechanisms involved in the internal environment homeostasis.
KNOWLEDGE AND UNDERSTANDING:
the student will have to know the physiology of the systems and functional mechanisms underlying them, with particular reference to the morpho-functional, chemical, biochemical, biophysical, cellular and molecular aspects.
AUTONOMY OF JUDGMENT:
the student will be able to demonstrate a critical approach and a research-oriented creative attitude. He will be able to take into account the importance and rethinking of information-based scientific thinking, obtained from different resources, to establish the cause, treatment and

prevention of diseases. He will be able to formulate personal judgments to solve analytical and complex problems and independently search for scientific information, without waiting for it to be provided to him, using the basis of scientific evidence.
COMMUNICATION SKILLS:
the student will be able to describe the theoretical and practical knowledge learned during the course in an essential, exhaustive way and with an adequate modern scientific language. The student will be able to collect, organize and critically interpret new scientific knowledge and health/biomedical information from the different resources and databases available.
ABILITY TO LEARN: consultation of databases, publications and information sources accredited at national and international level.

-Contents:
BIO/09 - HUMAN PHYSIOLOGY (9 CFU – 90 hours)
General principles: homeostasis and its control systems. Regulation of the composition of body fluids. Transmembrane transports.
Endocrine System and Chemical Messengers: synthesis, release, transport and mechanisms of action of Hormone. Effects on target cells. Control of hormone release.
Nervous system: Resting membrane potential. Action potentials. Local potentials. Synapses. Bioelectrical signal transduction. Receptors and sensory systems.
Muscular System: neuromuscular junction. Mechanism of contraction. Muscle fiber types and their metabolism. Physiology of skeletal, cardiac and smooth muscles.
Cardio-circulatory function: Blood: Plasma and interstitial fluid, red blood cells, white blood cells, platelets and hemostasis. The heart: functions of the common and conduction myocardium, cardiac cycle, cardiac output and its regulation. The circulatory system: the systemic circulation and pulmonary circulation. Circulatory blood flow in the various districts and its regulation.
Respiratory function: Functions of the airways. Respiratory mechanics and pulmonary ventilation. Nervous and chemical control of ventilation. Alveolar air. Gas exchange in the lungs and in tissues. Transport of blood gases.
Renal function: Glomerular ultrafiltration, reabsorption, secretion, excretion. Hydro-saline and Acid-base balances. Neuro-Humoral control of renal function. Endocrine function of the kidney.
Gastro-intestinal function: Motility, Secretion, Digestion and absorption, Nervous and hormonal control. The liver and its functions.
Physiology of nutrition: factors that influence energy metabolism.

-Didactic methods
Hours of lectures: 72
Seminar hours: 18
The course will be conducted with face-to-face lectures involving the use of PowerPoint presentations. In accordance with what is stated in the Manifesto of Studies for the AA 2020-2021 (pg.12): "Teaching will be delivered mainly in the classroom, integrated and "augmented" with online strategies, in order to ensure its use in an innovative and inclusive way.
Interactive software (Mentimeter) will be used for the verification of acquired knowledge. Slides of all teaching activities are made available online to students
The seminars include Powerpoint presentations made independently by groups of 2-4 students on topics in Human Physiology, agreed with the lecturer, for the purpose of further study. The presentations will be given to the whole class in person and/or online and will be followed by a short discussion on the topics illustrated. The writing and presentation of seminars is optional for students. However, the whole class must attend all scheduled seminars.

- Modalities of learning verification

The knowledge acquired by the student of the basic physiology of the apparatuses and of the functional control mechanisms, with particular reference to the morpho-functional, chemical and biochemical, cellular and molecular aspects, will be verified by means of a written test on the topics of the syllabus. The test is made up of a part of multiple-choice questions + open questions out of a total of 30 points and a final oral interview with particular emphasis on the subjects for which the candidate has shown an insufficient level of preparation on the basis of the results of the written test.
The final mark is the result of the written test, corrected on the basis of the results of the subsequent interview + 1 point if the candidate has presented a paper during the seminars of the Supplementary Teaching Activities. The grade is expressed in thirtieths.
The final grade takes into account several factors:
The quality of the knowledge, skills and competences possessed and/or demonstrated:
a) adequacy, correctness and congruence of knowledge
b) adequacy, correctness and congruence of skills
c) Adequacy, correctness and congruence of skills
Explanatory mode:
a) Expressive ability
b) appropriate use of technical language
c) Logical ability and consistency in linking content;
(d) the ability to relate different topics by finding common ground and creating a coherent overall design, i.e. by paying attention to structure, organisation and logical connections in their expository discourse;
e) the ability to synthesise, also by using one's own symbolism and the graphic expression of ideas and concepts, e.g. in the form of formulae, diagrams, equations.
Relational qualities:
Willingness to communicate and interact with the teacher during the interview. Personal qualities:
a) Critical mind;
b) Ability to self-evaluate.

- Reference texts
To be defined

INTEGRATED COURSE: NEUROANATOMY-NEUROPHYSIOLOGY

(9 CFU – 90 hours)

-Prerequisite:
Have knowledge of cytology, histology, human anatomy and biochemistry

-Learning objectives:
The anatomy and physiology of the central nervous system, including external and surface anatomy, its component parts and their correlations.
The chemical and molecular neuroanatomy and basic microscopical features of brain neurons.
The major nerve pathways and interconnections underlaying functional, integrative and adaptive roles.
KNOWLEDGE AND UNDERSTANDING:

A basic understanding of functional and anatomical bases of certain disease conditions affecting the human nervous system (see: Contents).
The ability to outline and discuss major topics concerning the nervous system and the neuroendocrine system, as listed in the course Contents.
Acquisition of critical tools and familiarity with issues related to the general organization of the nervous system, neuroanatomy and neuronal systems in relation to projection and association circuits, to chemical neuroanatomy and to the main functional correlations.
AUTONOMY OF JUDGEMENT:
The lessons will be set up in such a way as to allow students to acquire the ability to critically evaluate the knowledge of the topics covered.
COMMUNICATION SKILLS:
Acquisition of the ability to describe in an essential, complete and appropriate way the organization of the subdivisions of the central and peripheral nervous system and the immediate relationships between the functional activity of the nervous components and the peripheral areas of innervation. Use of specific language (nomenclature and terminology) of neuroanatomy and neurophysiology in an appropriate, autonomous and meaningful way. Demonstration of understanding of acquired knowledge through oral communication and graphic representations.
ABILITY TO LEARN:
Essential theoretical knowledge of the structure of neurons and the organization and function of the various neuronal systems acquired from advanced academic-level neuroanatomy and neurophysiology textbooks and from publications in international journals useful for the development, deepening and continuous updating of knowledge.

-Contents:
DIDACTIC UNIT: BIO/16 - NEUROANATOMY (5 CFU – 50 hours)
General organization, parts of central nervous system; surface anatomy, interconnections. Basic neuroembryology (even numbered course). Spinal cord: segments, laminae (local circuitry). Ascending, descending, modulatory pathways. Spinal nerves and ganglia.
Brain Stem: pathways, brainstem and cranial nerve nuclei, reticular formation; modulatory systems.
Cerebellum: parts, nuclei and connections, cerebellar cortex.
Diencephalon: thalamus and connections; hypothalamus: main nuclei, connections, neuro-endocrine interactions.
Basal Nuclei: striatum and globus pallidus (dorsal and ventral), subthalamic n., substantia nigra: major circuits.
Telencephalon: cerebral cortex, cortical areas and connections.
Limbic structures.
Afferent systems: spino-bulbo-thalamo-cortical, spino-thalamo-cortical, spino-cerebellar, trigeminal pathways. Modulatory pathways.
Motor systems: direct and indirect (extrapyramidal) pathways. Autonomic nervous system: afferents and efferents; higher, premotor and preganglionic centers; autonomic ganglia and notes on the enteric nervous system; regulatory circuits.
Gustatory and olfactory receptors, pathways, cortical areas.
Eye: tunics, dioptric systems, accessory organs; retina; visual and other pathways. External and middle ear, tubes, mastoid apparatus. Bony and membranous labyrinth, organ of Corti. Cochlear nuclei and connections, auditory pathways.
Vestibular receptors, vestibular nuclei and connections.
Meninges. Cerebral ventricles, choroid plexuses and cerebrospinal fluid circulation. Vascularization and microcirculation of the brain, blood-brain barrier, circum-ventricular organs.

DIDACTIC UNIT: BIO/09 - NEUROPHYSIOLOGY (4 CFU – 40 hours)
Notes on the anatomical and functional organization; neurons and glial cells. notes on higher functions: language, associative cortices, memory.
Membrane potential.
Action potential.
Synapse.
Neurotransmitters.
Second messengers.
Sensory system.
The perception of pain (and the placebo effect for the uneven numbered course).
Taste and olfaction.
Visual function.
Auditory function.
Vestibular apparatus.
Motor systems.
Motor and non-motor changes in Parkinsons' disease (uneven numbered course).
Reflexes.
Autonomic Nervous System.
Hypothalamic pituitary axis and responses to stress.
Learning and memory.
Sleep.

-Didactic methods
Lectures
The dialogue in the classroom, stimulated by the lecturer, is aimed at understanding the topics covered and dealing with doubts and perplexities about the information acquired.
In the course of individual lectures and in the final part of the course, adequate time will be set aside to deal with doubts, perplexities and questions raised by students within the programme. The lecturer will also be available for meetings and/or clarifications upon request by e-mail contact.

- Modalities of learning verification
Oral examination: the student has to discuss orally a number of different topics proposed by the teacher, using, if necessary, graphic representations and/or diagrams and conceptual maps. Knowledge of the course topics, ability to link different topics, expressiveness, use of appropriate terminology, consistency in linking content, ability to synthesise will be assessed. The grade is expressed in thirtieths, overall, on the basis of the answers to the different topics proposed in the examination, for each of which at least elementary preparation must be demonstrated.
Accordingly, the grade may be:
(a) Sufficient (18 to 20/30)
The candidate shows few acquired notions, superficial level, many gaps; modest expressive ability, but sufficient to maintain a coherent dialogue; logical ability and coherence in linking elementary level topics; poor synthesis and rather limited graphic expression; little interaction with the teacher during the interview.
(b) Fair (21 to 23)
The candidate shows a discrete acquisition of concepts, but little in-depth study, some gaps; more than sufficient expressive ability to sustain a coherent dialogue; acceptable command of academic language; logical ability and reasoning in the context of topics of moderate complexity; more than sufficient ability to synthesise and acceptable graphic expression.
c) Good (24 to 26)

The candidate demonstrates a fairly wide range of notions, moderate depth of knowledge, with small gaps; satisfactory expressive abilities and significant mastery of scientific language; dialogue skills and critical spirit are well detectable; good ability to synthesise and more than acceptable graphic expression.
d) Very Good (da 27 a 29)
The candidate demonstrates an extensive, well-in-depth knowledge base, with marginal gaps; remarkable expressive abilities and a high command of scientific language; remarkable dialogical ability, good competence and relevant aptitude for logical synthesis; high synthesis and graphic expression skills.
e) Excellent (30)
High expressive abilities and a high command of scientific language; excellent dialogue skills, aptitude for making connections between different topics; excellent ability to summarise and great familiarity with graphic expression graphics.
Honours are awarded to candidates who are clearly above average, and whose notional, expressive, conceptual or logical limitations are on the whole irrelevant.

- Reference texts
To be defined

INTEGRATED COURSE: BASICS OF FIRST AID 2

(3 CFU – 45 hours)

-Prerequisite:
Having attended courses the lessons of the previous and current academic year (till the date of the beginning of the course).

-Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
development of adequate knowledge of available international national and international guidelines regarding extra-hospital first aid and specifically Basic Life Support and Defibrillation (BLSD) and related scientific evidence of efficacy, in order to obtain an in-deep analysis of contents already acquired during the analogue first year course.
AUTONOMY OF JUDGEMENT:
the student will develop the necessary autonomy to perform a BLSD protocol, starting with first evaluation of the scene, safety issues, communication with other witnesses and advanced rescuers and performance of rianinatory maneuvers (ventilation, chest compressions, EAD).
COMMUNICATION SKILLS:
basic communications in emergency requirements. Discerning useful information from white noise, ask and give if required read back. Avoid communication errors.
ABILITY TO LEARN:
student will be asked to demonstrate the ability to modify their behaviour, following listening to explained experiences of other people and simulations of extra-hospital emergency

-Contents:
DIDACTIC UNIT: MED/41 - BASICS OF FIRST AID 2 (2 CFU – 10 hours)
• First Aid

• Epidemiology, anatomy and pathophysiology of cardiocirculatory arrest
• Vital functions physical examination
• Cardiopulmonary Resuscitation and BLSD
• Management of the unconscious patient
• Basics of guidelines development and improvement according to evidence- based medicine

DIDACTIC UNIT: MED/41 - BASICS OF FIRST AID 2 INTERNSHIP (1 CFU – 25 hours)
- interactive and dummy simulations:
- Judge the possibility and risks of an emergency rescue;
- Understand and formulate intervention codes corresponding to the type of pathology;
- Recognise the absence of one or more vital functions in adults and children;
- Perform cardiopulmonary resuscitation according to established protocols;
- Make and maintain an airway and ventilate artificially;
- Use of AED (automatic defibrillator);
- Perform environmental assessment of developmental risk;
- Perform primary, secondary and re-evaluation of the trauma patient;
- Carry out proper assessment in the patient with probable spinal injury.

-Didactic methods
The course will be conducted with face-to-face lectures using PowerPoint presentations and practical activities in the simulated medical teaching environment. Frontal lectures may be alternated with innovative teaching methods, which aim to actively involve students in the learning process (active learning) through the analysis and interpretation of clinical cases.

- Modalities of learning verification
Registration for the examination sessions will be carried out by logging onto ESSE3.
Students must have attended at least 70% of the total face-to-face lectures and at least 70% of each module, as well as all the hours scheduled for the professional activity, to be eligible to sit the examination.
The examination will consist of a written test with multiple choice and open questions.
Each question will be worth one point, with a total of thirty points available. A minimum of 18 points is required to pass.
Exams will be marked during the periods specified in the C.L. Teaching Calendar. Examination instructions

- Reference texts
To be defined

2 YEAR 2 SEMESTER

INTEGRATED COURSE: GENERAL PATHOLOGY AND IMMUNOLOGY

(15 CFU – 150 hours)

– Prerequisite:
The student must have acquired fundamental concepts and notions of Chemistry, Physics, Biology, Genetics, Histology, Anatomy and Physiology

- Learning objectives:
The student will have the basic information on the function of the immune system in defining and maintaining the identity and integrity of the individual. The student will know the strategies of the innate and adaptive immunity, and their synergic interplay. The student will acquire information on the acute inflammatory process and the mediators, and the molecular mechanisms involved in the genesis of the effective and regulatory responses. The student will know the etiology and pathogenesis of the main dysfunction of the immune responses, including hypersensitivity reactions and the principles of the transplant medicine. The Integrated Course of General Pathology has the fundamental purpose of defining the concept of disease and identifying the etiological factors (etiology) and the basic mechanisms (pathogenesis) through which they act, establishing a first direct connection between the basic disciplines and the clinics. This must allow the student to acquire analysis and synthesis tools to be able to establish relationships between etiological factors and specific pathologies. The program specifically includes the discussion of genetic-based diseases, physical, chemical, and biological disease factors, cell death mechanisms, the inflammatory process and acquired immunity, the neoplastic process, alterations in metabolism and basic pathophysiological processes in the various organs and systems.
KNOWLEDGE AND UNDERSTANDING
Acquisition of critical tools and familiarity with the issues inherent to the basic pathological and physiopathological processes. Know the mechanisms of the main pathological processes at the cellular, organ and systemic level
AUTONOMY OF JUDGEMENT:
The lessons will be set up in such a way as to allow students to acquire the ability to critically evaluate the knowledge of the topics covered. Knowing how to interpret and compare new scientific data and new acquisitions relating to pathological mechanisms.
COMMUNICATION SKILLS:
Acquisition of the ability to describe the relevant aspects of a specific pathological process in an essential, complete and appropriate way. The student will be able to argue the contents of the course using the language and vocabulary typical of the discipline, in an appropriate, autonomous and meaningful way. He will interact with the teacher by discussing the main points of the study program.
ABILITY TO LEARN:
The student will learn to acquire new information and to implement their cultural background critically through the consultation and critical interpretation of recent national and international scientific literature.

-Contents:
DIDACTIC UNIT: MED/04 - GENERAL IMMUNOLOGY (4 CFU – 40 hours)
• The immune system as a defense organ of the individual's integrity. The distinction between self and non-self

• General characteristics of immune responses. Non-specific and specific defenses.
• Innate and adaptive immunity
• The inflammatory reaction: biology and mediators. The primary and secondary lymphatic organs. Lymphocytes. B and T receptors. Antibodies and antigens. The major histocompatibility complex Presentation of Ag. T and B interaction
• Regulation of the immune response. Immunological Tolerance, Transplant Immunology
• Immunopathology: hypersensitivity and autoimmune

DIDACTIC UNIT: MED/04 - GENERAL PATHOLOGY (11 CFU – 110 hours)
Cell damage, stress, adaptation mechanisms, cell death - Necrosis and apoptosis - Acute inflammation - Chronic inflammation - Repair, regeneration and fibrosis - Cell proliferation and differentiation - Molecular basis of genetic diseases: point gene mutations, deletions and insertions - Extrinsic causes of diseases: injuries from physical, chemical and biological agents. Metabolic Drug System. Environmental and occupational pathology. Aging.
- Oncology: Principles of tumor epidemiology - Definition. Terminology. Characteristics of benign and malignant tumors - Cultural characteristics of tumor cells - Metastasis process - Biochemical-morphological atypia - Chemical, physical and biological etiological agents. Mechanism of action of carcinogens and DNA repair systems - Molecular basis of tumors - Biology of tumor growth - Principles of targeted therapy - Models of carcinogenesis. Pathophysiology: Thermoregulation: Hyperthermia and fever - Diabetes - Gout - Atherosclerosis, thrombosis, embolism - Hepatic insufficiency and steatosis - Heart failure and arterial hypertension - Pathogenesis of the main respiratory diseases and respiratory failure - Kidney failure- Blood cells: qualitative and quantitative changes. Non-inflammatory edema. Osteoporosis. Obesity and malnutrition. Impaired production, transmission, reception and translation of the hormone signal.

-Didactic methods
Lectures (face to face) using Power Point presentations.
Teaching will be face to face. If any pandemic situation makes it necessary, distance or "mixed" (distance and face-to-face) teaching will be used. In this case, each student can make a binding choice at the beginning of the semester between face-to-face and distance learning. Depending on the availability of classrooms and the number of students opting for the face-to-face mode, a schedule for actual classroom access may still be considered.

- Modalities of learning verification
For odd number student registrations, 3 self-assessment tests will be conducted at the end of each lecture cycle;
1. Cellular, molecular, genetic and general pathology
2. Oncology
3. Pathophysiology
At the end of the integrated course, an oral examination will be held.
For even number student registrations, the examinations will be oral.
The final mark is expressed in thirtieths. The examination is passed if at least a mark of 18/30 is obtained.
As regards testing by oral examination: students must answer open-ended questions on various topics in the syllabus. Knowledge of the course topics, the ability to link different topics, the ability to express themselves, the use of appropriate terminology and the ability to summarise will be assessed.
The final grade takes into account the following:
- quality of knowledge, skills and competences possessed (appropriateness, correctness and congruence)

- Appropriate use of formalism and discipline-specific language
- logical and logical consistency of content, ability to link different topics by finding common ground and creating a coherent overall design, i.e. structure, organisation and logical connections
- the ability to synthesise (also through the use of subject-specific symbolism and the graphic expression of ideas and concepts in the form of formulae, graphs, diagrams, chemical equations). The marking scheme is as follows:

a) Sufficient (18 to 20/30)
The candidate shows few acquired concepts, a superficial level, many gaps, modest expressive ability but sufficient to maintain a coherent dialogue; logical ability and coherence in linking topics at an elementary level; poor ability for synthesis and graphic expression; little interaction with the teacher during the interview.

(b) Fair (21 to 23)
The candidate shows a discrete acquisition of concepts, but little in-depth study, a few gaps; more than sufficient expressive ability to sustain a coherent dialogue; acceptable command of academic language; logical ability and coherence in the connection of topics of moderate complexity; more than sufficient ability for synthesis and graphic expression.

c) Good (from 24 to 26)
The candidate demonstrates a fairly broad knowledge of the subject, moderate depth of knowledge, with small gaps; satisfactory expressive abilities and significant mastery of the scientific language; dialogue skills and critical ability are well detectable; good synthesis skills and more than acceptable graphic expression.

d) Very Good (27 to 29)
The candidate demonstrates an extensive, in-depth knowledge of the subject, with only marginal gaps; considerable expressive abilities and a high command of scientific language; considerable dialogical ability, good competence and relevant aptitude for logical synthesis; high capacity for synthesis and graphic expression.

e) Excellent (30)
The candidate demonstrates a very extensive and thorough knowledge of the subject, any gaps irrelevant; high expressive abilities and a high command of the scientific language; excellent conversational skills, aptitude for making connections between different topics; excellent ability to summarise and great familiarity with graphic expression.

Honours are awarded to candidates who are clearly above average, and whose notional, expressive, conceptual or logical limitations are on the whole irrelevant.

The final course grade is obtained by averaging the results of the questions on the main course topics.

- Reference texts

To be defined

INTRODUCTORY CLERKSHIP 2

(2 CFU – 50 hours)

– Prerequisite:
Only students in possession of a certificate of suitability issued by the competent doctor and who have successfully completed the 'Introductory training in risk assessment and management', a compulsory training activity equivalent to 1 CFU relating to the information and training of students on the risks to which they may be exposed during their professional activities, may participate in the training courses held in the health care environment.

- Learning objectives:
Knowledge and Understanding:
The student must demonstrate an advanced and integrated understanding of clinical and medical sciences, applying this knowledge to complex clinical situations.
They must be able to link scientific theories, principles and data to clinical practice, recognising and explaining complex pathologies and multi-system conditions.
Ability to apply knowledge and understanding:
The student must be able to apply advanced clinical knowledge in a practical and safe manner, performing complex diagnostic and therapeutic procedures.
They must be able to manage complex clinical cases, making accurate diagnoses, planning and implementing appropriate treatments and monitoring the patient's clinical evolution.
They must be able to work in emergency and urgent situations, demonstrating readiness and competence.
Making Judgments:
The student must develop the ability to make autonomous clinical decisions in complex contexts, integrating clinical information, diagnostic data and ethical considerations.
They must be able to critically evaluate scientific evidence and clinical guidelines, tailoring therapeutic decisions to the specific needs of patients.
They must demonstrate the ability to solve complex problems, handling situations of clinical uncertainty with competence and professionalism.
Communication Skills:
The student must possess excellent communication skills, which are essential to interact effectively with patients, families and multidisciplinary healthcare teams.
They must be able to explain complex medical conditions, treatment options and prognoses to patients and their families in a clear and understandable manner.
Must demonstrate empathy, active listening and the ability to work in a team, facilitating inter-professional collaboration.
Learning Skills:
The student must demonstrate continuous learning skills, keeping his or her knowledge and skills up-to-date through continuous training and self-study.
They must be able to critically reflect on their clinical practice, identifying areas for improvement and adopting strategies for their own professional development.
They must actively participate in refresher courses, conferences and educational activities, also contributing to the training of colleagues and students.

-Contents
Communicating appropriately with the patient (communication skills);
Preparing and informing the patient for diagnostic and laboratory investigations;
Principles of interdisciplinary and interprofessional work management (interprofessional education).

Prevention of pressure injuries;
Management of vascular access;
Surgical wound dressing;
Haemoglobin analysis;
Bladder catheterisation;
Control and monitoring of invasive devices. Know how to do this independently:
Apply biological, chemical and physical risk prevention techniques;
Carry out a vital signs assessment;
Carry out intramuscular and subcutaneous injections;
Perform an ECG;
Locate and assess the quality of the major veins of the upper limb (basilic, cephalic, median, cubital, radial, ulnar);
Perform venipuncture

-Didactic methods
practical activities in the advanced medical simulation centre and in the in-patient ward,

-Modalities of learning verification:
Certification and evaluation of attendance is carried out by the appointed tutor who
issues a formal certificate of attendance and provides an opinion on the progress of the traineeship; evaluation of the results related to the competences demonstrated

-Reference texts:
To be defined

3 YEAR 1 SEMESTER

ANATOMICAL PATHOLOGY 1

(5 CFU – 50 hours)

-Prerequisite:
Knowledge of all organs and systems normal human anatomy and histology.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
the student will have to know the chief morphological lesions (macroscopic, microscopic, ultrastructural, and molecular) of the main systematic pathological entities. Furthermore, the student will study the correlations between cytological, histological, ultrastructural, molecular alterations and the clinical picture.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic, laboratory and instrumental data with macroscopic, histology, immunohistochemical, ultrastructural and molecular biology data and formulate a diagnostic judgment in the context of the main systematic pathological entities.
COMMUNICATION SKILLS:

the student will learn to properly show and communicate the relevant data of a specific pathology related to a clinical case.
ABILITY TO LEARN:
the student will learn how critically research new information and increase their background through the consultation and critical interpretation of recent scientific literature.

-Contents:
MED/08 - ANATOMICAL PATHOLOGY 1 (5 CFU – 50 hours)
PATHOLOGICAL ANATOMY
The sample process
POST MORTEM EXAMINATION
Autopsy
Italian post mortem regulation policy
Epicrisis
MOLECULAR BIOLOGY
Genetics and epigenetics
Molecular biology of tumors
Treatment of cancer
Stem cells
Genetic storage diseases
ELECTRON MICROSCOPY
Role of Electron Microscopy in pathological diagnostics
HEAD-NECK PATHOLOGY
Dysplasia
Squamous cell carcinoma
Salivary gland tumors: Pleomorphic adenoma, Warthin's tumor, Mucoepidermoid carcinoma
PLACENTARY FETUS PATHOLOGY
Maternal vascular malperfusion
Acute chorionamnionites
VESSEL PATHOLOGY
Atherosclerosis: Elementary injuries, Stable and unstable plaques
Vasculitis: Giant cell arteritis, Takayasu's arteritis, Panarteritis nodosa, Kawasaki disease, Wegener's granulomatosis
Aneurysms
HEART PATHOLOGY
Cardiac remodeling
Hypertrophic, dilated, arrhythmogenic, restrictive cardiomyopathies
Ischemic heart disease
Myocarditis
Endocarditis
Rheumatic disease
Pericarditis
CYTOPATHOLOGY
Cytomorphological characters of malignancy
Effusions
Milan System
Paris System
Bethesda system for cervical vaginal cytology
Bethesda System for thyroid cytology
Breast cytology
HEMOLINFOPROLIFERATIVE PATHOLOGY

Classifications (WHO 4R, WHO 5, ICC)
Lymphatic Tissues
Architecture of the lymphatic tissue
Lymphadenitis: Granulomatous lymphadenitis, Bartonella Henselae, EBV, TB and toxoplasma lymphadenitis
Castleman's disease
IgG4 disease
Lymphomas
B lymphomas: Lymphoma of the marginal zone, Follicular lymphoma, Lymphocytic lymphoma / chronic lymphocytic leukemia, Mantle cell lymphoma, Diffuse large B cell lymphoma, High-grade lymphomas, Burkitt's lymphoma, Lymphoid proliferation from immunological dysregulation
Hodgkin's lymphoma
T lymphomas: PTCL NOS, TFHL, ALCL (ALK +, ALK-, cutaneous, breast implant)
Bone Marrow
Bone-medullary biopsy reading scheme
Myelodysplastic syndromes
Myeloproliferative neoplasms
Mastocytosis
Myeloid / lymphoid neoplasms
Acute leukemias
PATHOLOGY OF THE RESPIRATORY SYSTEM
Laryngitis, bronchitis and bronchiolitis
COPD
Pulmonary edema
IRDS and ARDS - SARS
Pulmonary thromboembolism
Chronic interstitial idiopathic pneumopathies UIP and NIP
Pneumonia: Interstitials, SARS-CoV2, Alveolar, Bronchopneumonia
Tuberculosis
Sarcoidosis
Pleurisy
Mesothelioma
Lung tumors: Atypical adenomatous hyperplasia and adenocarcinoma in situ, Minimally invasive adenocarcinoma, Mucinous and non-mucinous invasive adenocarcinoma, Dysplasia and squamous cell carcinoma in situ, Squamous cell carcinoma, Large cell carcinoma, Adenosquamous carcinoma, Sarcomatoid carcinomas, Nut carcinoma, Diffuse idiopathic neuroendocrine cell hyperplasia, Neuroendocrine tumors, Neuroendocrine carcinomas, Molecular characterization of lung tumors, Pulmonary hamartoma Ciliopatie
BREAST PATHOLOGY
Breast dysplasia
Sclerosing adenosis
Intraductal and intralobular carcinoma in situ
Paget's disease
Infiltrating carcinoma NST (No Special Type)
Infiltrating carcinoma special histotypes: lobular carcinoma
Molecular classification of breast cancer
Fibroadenoma and phyllodes tumor
PATHOLOGY OF THE KIDNEY
Kidney biopsy reading pattern
Congenital anomalies

Glomerular pathology: Minimal lesion glomerulopathy, Alport syndrome, Acute post-infectious GN, GN proliferated extracapillary, GN member proliferated: Type I, Type II, Membranous GN, Berger's GN, Focal segmental glomerulosclerosis
Lupus nephropathy
Diabetic nephropathy
Amyloidosis and light chain disease
Vascular pathology
Diseases of the tubules and interstitium
Transplant
Kidney tumors: Renal cell tumours, Metanephric tumours, Mixed epithelial and stromal renal tumours, Renal mesenchymal tumours, Embryonal neoplasms of the kidney, Germ cell tumours of the kidney.

-Didactic methods
The course will be conducted with frontal lectures involving the use of didactic presentations and the presentation of pathological clinical cases diagnosed within the laboratories of the UOC of Pathological Anatomy of the AOU of Cagliari. The frontal lectures and clinical case presentations will use both static and dynamic iconographic material, as well as clinical, laboratory, and instrumental data, to exemplify the integrated histopathological-pathological diagnostic process. The teaching will take place in the classroom.

- Modalities of learning verification

The examination will consist of a written test with multiple choice and open questions.Each question will be worth one point, with a total of thirty points available. A minimum of 18 points is required to pass.Exams will be marked during the periods specified in the C.L. Teaching Calendar. Examination instructionsEnrolment for the exams is via the telematic procedure (ESSE3).Quality of knowledge, skills, competences possessed and/or manifested:

a) appropriateness, correctness and congruence of knowledge
(b) appropriateness, correctness and congruence of skills
c) appropriateness, correctness and congruence of skills
Expressive mode:
a) Expressive ability;
b) Appropriate use of language specific to the discipline;
c) Logical ability and consequentiality in linking content;
e) Ability to link different topics by finding common points and establishing a coherent overall design, i.e. paying attention to the structure, organisation and logical connections of the expository discourse;
f) Ability to synthesise.

- Reference texts
To be defined

INTEGRATED COURSE: LABORATORY MEDICINE

(5 CFU – 65 hours)

– Prerequisite:
The student must have acquired fundamental concepts and notions of Biochemistry, General Pathology and Immunology

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING
• To know the principles of good organization of the biomedical laboratory, and accreditation systems.
• To know the main methodologies applied to clinical analyzes and the metabolic changes induced by the most common pathologies.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
• The student will acquire methodological and instrumental application skills to request and correctly interpret laboratory investigations with particular attention to the markers of the main organ failure and the main mechanisms of alteration of homeostasis. The student will acquire methodological and instrumental application skills to request and correctly interpret laboratory investigations. The student will acquire the ability to rationally and efficiently choose which laboratory tests to use among those available.
AUTONOMY OF JUDGEMENT:
• The student will learn to critically interpret and compare new acquisitions related to laboratory tests
COMMUNICATION SKILLS
• The student will learn to expose the relevant data of laboratory tests. The student will be able to argue the contents of the course using the formalisms, language, and vocabulary typical of the discipline. He will interact with the teacher by discussing the main points of the study program.
ABILITY TO LEARN
• The student will learn to acquire new information and to implement their cultural background in a critical way through the consultation and critical interpretation of recent national and international scientific literature.

-Contents:
DIDACTIC UNIT: BIO/12 - CLINICAL BIOCHEMISTRY (1 CFU – 10 hours)
Structure and organization of the medical laboratory.
• Types of tests and their purposes, biological samples (blood, urine, stool, saliva, synovial fluid, liquor, sperm liquid) and their preservation.
• Quality Control in Clinical Pathology. Normative requirements. Italian Society of Clinical Pathology and Online Documentation.
• Reference intervals, sensitivity, specificity, interfering factors, abnormal values.
• Inflammatory Biomarkers: VES, PCR, Electrophoresis Serum Protein.
• Urinalysis.
• Electrolyte analysis and acid-base balance (emogasanalysis).
• Biomarkers of erythropoiesis and anemia: hemochrome, blood smear, folic acid, Vit. B12.
• Biochemical tests for assessing iron metabolism.
DIDACTIC UNIT: MED/05 - CLINICAL PATHOLOGY (3 CFU – 30 hours)
• Why require laboratory tests?
• Interpretation of laboratory tests.
• Biomarkers of Liver and bile ducts.
• Biomarkers of pancreas and gastro-intestinal disorders.
• Biomarkers of the cardiovascular system.

• Diagnosis and Monitoring of Diabetes Mellitus.
• Biomarkers of Kidney function.
• Biomarkers of hemostasis
• Biomarkers of neoplastic diseases
• Laboratory tests during pregnancy.
• Laboratory tests in Geriatrics.
• Tests of hormones produced by the thyroid, parathyroid, adrenal gland, and gonads.
• Tests for autoimmune diseases.
* Essentials lab test
* Preoperatory test
• Biomarkers in "-omics" sciences.
* Lab Test and COVID-19
DIDACTIC UNIT: MED/05 - LABORATORY MEDICINE INTERNSHIP (1 CFU – 25 hours)
- Interpretation of key laboratory parameters used in clinical practice;
- Interpretation of urine tests.
- Interpretation of the main biomarkers (renal function, cardiac liver, pancreatic, etc.).

- Didactic Methods

The course consists of 40 hours of lectures, divided into 30 hours of Clinical Pathology and 10 hours of Clinical Biochemistry. Additionally, students are required to complete 1 CFU (Credit Formative Unit) of professional activities before the final examination.

- Modalities of learning verification

The assessment will be conducted through an oral examination, where students must respond to open-ended questions covering various topics from the syllabus. The final grade is expressed on a scale of thirty, with a minimum passing mark of 18/30. During the examination, students will discuss topics presented by the lecturer.

Evaluation criteria include:

- Knowledge of course topics
- Ability to link different topics
- Clarity of expression
- Use of appropriate terminology
- Ability to summarize

The final grade considers the following aspects.

Quality of knowledge, skills, and competence:

a) Appropriateness, correctness, and congruence of knowledge
b) Appropriateness, correctness, and congruence of skills
c) Appropriateness, correctness, and congruence of competencies

Expressive Mode:

a) Expressive ability
b) Appropriate use of discipline-specific language
c) Logical ability and coherence in linking contents
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Ability to synthesize

Grading Scale:

a) Sufficient (18-20/30): The candidate shows limited knowledge, superficial understanding, many gaps, and modest expressive abilities, but sufficient to maintain a coherent dialogue. Logical abilities and topic connections are elementary; synthesis and graphical expression abilities are poor; interaction with the teacher during the interview is minimal.
b) Fair (21-23/30): The candidate demonstrates reasonable acquisition of knowledge with few gaps; expressive abilities sufficient to maintain a coherent dialogue; acceptable mastery of scientific language; moderate logical abilities and topic connections; more than sufficient synthesis and graphical expression abilities.
c) Good (24-26/30): The candidate displays a broad range of knowledge with moderate depth and small gaps; satisfactory expressive abilities and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis and acceptable graphical expression.
d) Very Good (27-29/30): The candidate has extensive, well-in-depth knowledge with minor gaps; considerable expressive abilities and high command of scientific language; remarkable dialogical ability, good logical synthesis competence; high capacity for synthesis and graphical expression.
e) Excellent (30/30): The candidate exhibits extensive and thorough knowledge, with irrelevant gaps; high expressive abilities and excellent command of scientific language; exceptional dialogue skills, ability to make connections between different topics; excellent synthesis skills and familiarity with graphical expression.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, concept, or logic.

The final course grade is the average of the results from the questions on the main course topics.

- Reference texts
To be defined

INTEGRATED COURSE: MICROBIOLOGY AND INFECTIOUS DISEASES

(14 CFU – 170 hours)

– Prerequisite:
Basic knowledge of biology and molecular biology, of biochemistry, of general pathology and preparatory skills as per the didactic regulations

- Learning objectives:

KNOWLEDGE AND UNDERSTANDING

Knowing the biological identity of microorganisms (bacteria, viruses, fungi), their distinctive characteristics and their interaction with humans in normal and disease conditions. Distinguishing pathogenic from non-pathogenic microorganisms. Knowing the mechanisms of pathogenicity and virulence, the main means to prevent and / or treat diseases of microbial aetiology and the principles of direct and indirect microbiological diagnostics. Knowing the main groups of human pathogenic microorganisms, the diseases they cause and the pathogenic mechanisms. Knowing the main human parasitic protozoa and helminths, the diseases they cause, the methods of infestation, laboratory diagnosis and prophylaxis measures.

The student will have to know the general principles of Infectious Diseases, of the most important pathogenic microorganisms for the human species and of the pathogenesis and host defense mechanisms. This knowledge must include notions of epidemiology and prophylaxis of infectious diseases, health education, and general principles of therapy.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

The student will have the ability to apply their knowledge to the various issues of microbiology in the health and biomedical fields. They will acquire the ability to solve identification and interpretative questions in the microbiological field using the most correct and appropriate methodologies and procedures. The student will be able to request and correctly interpret laboratory investigations with particular attention to the markers of infection and the reading of the antibiogram. The student will acquire the ability to rationally and efficiently choose which laboratory tests to use among those available.

The student will acquire methodological and instrumental applicative skills for a correct epidemiological approach to health / disease problems in the population and for the prevention of diseases in the individual and in the community, with reference to infectious syndromes in general. The student will be able to demonstrate a critical and constructive approach and a research-oriented creative attitude. They will be able to take into account the importance and limitations of information-based scientific thinking, from various sources, to establish the cause, treatment and prevention of diseases.

AUTONOMY OF JUDGMENT:

The student will be able to formulate personal judgments to solve analytical and complex problems and independently search for scientific information, on the basis of scientific evidence, including the interpretation and comparison of scientific data and new acquisitions relating to laboratory tests.

COMMUNICATION SKILLS

The student will be able to describe the theoretical and practical knowledge learned during the course in an essential, exhaustive way and in an adequate modern scientific language. The student will be able to collect, organize and critically interpret new scientific knowledge and health / biomedical information from the different resources and databases available. They will be able to identify their training needs. The student will be able to argue the contents of the course and will learn to expose the relevant data of a specific clinical case and to appropriately communicate the development and outcome of diagnostic procedures and therapeutic interventions. The student will interact with the teacher discussing the main points of the study program.

LEARNING ABILITY

The student will be able to acquire new information and implement the cultural background in a critical way through the consultation and analytical interpretation of the latest scientific literature produced at a national and international level.

-Contents:

DIDACTIC UNIT: MED/17 - INFECTIOUS DISEASES (3 CFU –30 hours)

General principles: etiology, epidemiology, pathogenesis, diagnosis and prophylaxis of infectious diseases. Host defense mechanisms: innate and acquired immunity
Respiratory infections: Airway infections, Influenza, Infectious pneumonia, SARS-CoV-2 infection
Infections of the lymphoreticular system
or Malaria
Intestinal infections
Cystic hydatidosis
Infections in pregnancy (TORCH complex)
Herpetic infections
Rickettsiosis: Mediterranean button fever
Tuberculosis
Meningitis
Endocarditis
Sepsis
Acute and chronic viral hepatitis
HIV infection and related syndromes
Principles of antibiotic and antiviral therapy

DIDACTIC UNIT: MED/07 - CLINICAL MICROBIOLOGY (2 CFU – 20 hours)
Mycology
Fungi and their classification
Mycosis of medical interest
Antifungal drugs
Parasitology
Protozoa and human parasitic helminths
Biological characteristics, classification and life cycles
Pathogenesis and pathogenic action of parasites
Main diseases caused by protozoa and helminths
Outline of laboratory diagnosis and therapy of the main human parasites

The pre-analytical phase:
• Suitable / unsuitable samples, collection, transport and possible storage of samples for bacteriological, mycological, parasitological and virological diagnostics; correct compilation of the request.
The analytical phase:
• Direct diagnosis: microscopic examination, cultivation on solid and liquid soils, identification and antibiogram; immunological and molecular methods for the identification of bacteria, fungi, viruses and parasites.
• Indirect diagnosis. The post-analytical phase.
• Infections of the respiratory system
• Infections of the urinary tract
• Infections of the genital tract and sexually transmitted diseases (STDs)
• Infections of the gastrointestinal tract
• Infections of the central nervous system and sense organs
• Skin and soft tissue infections
• Infections of bones, muscles and joints
• Infections of wounds and abscesses
• Infections of the circulatory system
• Zoonoses and vector-borne infections
• Infections of the fetus and newborn

• Viral infections of childhood and adolescence
• Diagnosis of viral hepatitis
• HIV diagnosis
• Healthcare Related Infections (ICA or HAI)

DIDACTIC UNIT: MED/07 - GENERAL AND SPECIAL MICROBIOLOGY (5 CFU – 50 ore)
• Microorganisms and their classification
• Bacteria: structure and function of the bacterial cell, growth and metabolism
• Elements of bacterial genetics
• Microorganism-human interactions: the human microbiota, pathogenicity and virulence, infection and disease
• Modes and routes of transmission of microbial infections
• Control of microbial growth - Antibiotics and antibiotic resistance
• Gram-positive: Streptococci and Enterococci, Staphylococci, Bacilli and Clostridia, Listerie, Mycobacteria, Corinebacteria and other Actinobacteria
• Gram-negative: Neisserie, Bordetelle, Moraxelle, Hemophiles, Pasteurelle, Enterobacteriaceae, Vibrionaceae, Aeromonas and Plesiomonas, Pseudomonadaceae, Xanthomonadaceae, Burkholderiacee, Campylobacter and Helicobacter, Legionelle and Coxielle, Brucelle, Francishettsial, Bartlicelle and Bartolias and Fusobacteria, Treponemi, Borrelie and Leptospire
• Others: Chlamydias, Mycoplasmas and Ureaplasmas

DIDACTIC UNIT: MED/07 - VIROLOGY (2 CFU – 20 hours)
• Viruses: structure and classification
• Virus-host replication and relationships; lytic cycle, persistence, latency, cell transformation; bacterial viruses
• Viral pathogenesis, transformation and oncogenesis
• Antiviral drugs and interference
• DNA pathogenic viruses: Adenoviridae, Herpesviridae, Papillomaviridae, Polyomaviridae, Parvoviridae
• RNA viruses: Paramyxoviridae, Orthomyxoviridae, Togaviridae, Picornaviridae
• Hepatitis A, B, C, D, E virus,
• Retroviridae and HIV
• Subviral agents and prions

DIDACTIC UNIT: MED/17 - INFECTIOUS DISEASES INTERNSHIP (1 CFU – 25 hours)
- Paracentesis;
- Invasive diagnostic procedures and therapy.
- Taking a medical history in a patient with an infectious disease;
- Perform objective examination aimed at recognizing the signs and symptoms of suspected infectious pathology;
- Describe the clinical manifestations of major infectious diseases;
- Perform set-up for the main diagnostic methods.

DIDACTIC UNIT: MED/07 - CLINICAL MICROBIOLOGY INTERNSHIP (1 CFU – 25 ore)
- Preparation of fresh and stained slides using the main methods;
- Culture examination for bacteria and mycetes and isolation of pathogenic microorganisms;
- Identification by biochemical tests;
- Preparation of antibiograms and MICs.
- Microscopic observation of preparations;
- Pharyngeal swab execution;

- Reading antibiogram

- Didactic Methods

The course will be conducted through lectures using PowerPoint presentations, according to the schedule published by the degree program. Lecture slides in PDF format will be accessible on the teaching platform for students in good standing and provided with UNICA credentials. Active learning will be promoted by continuously inviting students to reflect on topics with review questions and research on databases and scientific literature.

- Modalities of Learning Verification

Microbiology Module: At the end of the course and for the first three official calls, there will be a written test on every topic covered. In all other sessions, there will be an oral test, consisting of questions on the course content set by the various lecturers. A student who does not pass the quizzes may still request to take the entire oral examination.
Written Test in Microbiology: The student must answer 120 multiple-choice questions on topics from the syllabus. Each question is scored 1 if correct, -0.20 if incorrect, and 0 if unanswered. The test will last 90 minutes.
Oral Test: The student's knowledge and understanding of the content, as well as their ability to apply the acquired knowledge, will be assessed. The candidate's critical and expository skills will also be evaluated. The mark will be awarded based on a thirtieth scale, derived from the weighted average of the marks obtained in the various modules of the integrated course.
The final grade will consider the following:
Quality of knowledge, skills, and competencies possessed and/or manifested:

a) Appropriateness, correctness, and congruence of knowledge
b) Appropriateness, correctness, and congruence of skills
c) Appropriateness, correctness, and congruence of competencies.

Expressive Mode:
a) Expressive ability
b) Appropriate use of discipline-specific language
c) Logical ability and coherence in linking content
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Ability to synthesize

Grading Scale:

a) Sufficient (18-20/30): The candidate demonstrates limited knowledge, superficial understanding, many gaps, modest expressive abilities, but sufficient to maintain a coherent dialogue; elementary logical abilities and topic connections; poor synthesis and graphical expression abilities; poor interaction with the teacher during the interview.

b) Fair (21-23/30): The candidate shows reasonable acquisition of knowledge with few gaps; expressive abilities sufficient to maintain a coherent dialogue; acceptable mastery of scientific language; moderate logical abilities and topic connections; more than sufficient synthesis and graphical expression abilities.

c) Good (24-26/30): The candidate demonstrates a broad range of knowledge with moderate depth and small gaps; satisfactory expressive abilities and significant mastery of scientific

language; noticeable dialogue skills and critical thinking; good synthesis and acceptable graphical expression.

d) Very Good (27-29/30): The candidate has extensive, well-in-depth knowledge of the subject with minor gaps; considerable expressive abilities and high command of scientific language; remarkable dialogical ability, good logical synthesis competence; high capacity for synthesis and graphical expression.

e) Excellent (30/30): The candidate shows very extensive and thorough knowledge, with irrelevant gaps; high expressive abilities and excellent command of scientific language; exceptional dialogue skills, ability to make connections between different topics; excellent synthesis and familiarity with graphical expression.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, concept, or logic.

The final course grade is the average of the results from the questions on the main course topics.

- Reference texts
To be defined

3 YEAR 2 SEMESTER

INTEGRATED COURSE: PATHOLOGICAL ANATOMY 2

(7 CFU – 85 hours)

– Prerequisite:
Knowledge of all organs and systems of normal human anatomy and histology, in addition to the contents of Anatomical Pathology 1

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student will have to know the chief morphological lesions (macroscopic, microscopic, ultrastructural, and molecular) of the main systematic pathological entities. Furthermore, the student will study the correlations between cytological, histological, ultrastructural, molecular alterations and the clinical picture.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
The student will have to acquire the ability to deal with the pathological diagnostic report of the main systematic pathological entities; the student will have to know how to explain the differential diagnoses from a pathological point of view, correlating and integrating clinical, laboratory, instrumental data to the macroscopic, histological, immunophenotypic, ultrastructural and molecular biology picture.
AUTONOMY OF JUDGEMENT:

The student will learn to acquire and integrate anamnestic, laboratory and instrumental data with macroscopic, histology, immunohistochemical, ultrastructural and molecular biology data and formulate a diagnostic judgment in the context of the main systematic pathological entities.
COMMUNICATION SKILLS:
The student will learn to properly show and communicate the relevant data of a specific pathology related to a clinical case.
ABILITY TO LEARN:
The student will learn how to critically research new information and increase their background through the consultation and critical interpretation of recent scientific literature.

-Contents:
DIDACTIC UNIT: MED/08 - PATHOLOGICAL ANATOMY (6 CFU – 60 hours)
BREAST PATHOLOGY
Benign epithelial proliferations
Sclerosing adenosis
Ductal and lobular carcinoma in situ
Paget disease
Invasive breast carcinoma (NST, special histotypes, lobular carcinoma)
Molecular classification of breast cancer
Fibroepithelial tumours: fibroadenoma and phyllodes tumor
HEMOLINFOPROLIFERATIVE PATHOLOGY
Architecture of the lymphatic tissue
Lymphadenitis, Castleman's disease, IgG4 disease
Lymphomas classifications (WHO, ICC): FL, MCL, MZL, CLL/SLL, DLBCL, BL, ALCL, PTCL, TFHL, CHL, NLPHL
Bone marrow biopsy interpretation
Myelodysplastic syndromes, myeloproliferative neoplasms, mastocytosis, myeloid/lymphoid neoplasms, acute leukemias
SOFT TISSUE AND BONE TUMOURS
Classification
Immunohistochemistry and molecular biology
Adipocytic tumours
Fibroblastic and myofibroblastic tumours
Vascular tumors
Muscle tumors
Synovial sarcoma
Fibrohistiocytic tumors
Ewing's sarcoma
Peripheral nerve sheath tumours
GIST
Bone tumors
PATHOLOGY OF THE KIDNEY
Kidney biopsy interpretation
Congenital anomalies
Glomerular pathology: Minimal change disease, Alport syndrome, post-infectious GN, extracapillary proliferative GN, membranoproliferative GN, membranous GN, Berger's disease, focal segmental glomerulosclerosis (FSGS)
Lupus nephropathy
Diabetic nephropathy
Amyloidosis and light chain disease

Vascular pathology
Tubulointerstitial disease
Kidney transplant
Kidney tumors
URINARY AND MALE GENITAL PATHOLOGY
Tumors of the urinary tract
Tumors of the testis
Tumor of the prostate
GYNECOPATHOLOGY
Uterine bleeding
Endometrial hyperplasia
Endometrial carcinomas
Mesenchymal tumors of the uterus
Endometriosis
Tumors of the ovary
Tumors of the uterine cervix
SNC PATHOLOGY
Alzheimer's disease
Parkinson's disease
Multiple sclerosis
Amyotrophic lateral sclerosis
Classification of CNS tumors
Brain tumors
ENDOCRINE PATHOLOGY
Thyroiditis
Thyroid tumors
SKIN TUMOURS
Basal cell carcinoma
Squamous cell carcinoma
Melanocytic neoplasms (naevi, melanocytomas, melanomas, Spitz tumor
Merkel cell carcinoma

DIDACTIC UNIT: MED/08 - PATHOLOGICAL ANATOMY INTERNSHIP (1 CFU – 25 hours)
interpretation and diagnosis through discussion of cases
Examination and interpretation of histopathological preparations

-Didactic methods
The course will be conducted through frontal lectures using didactic presentations and pathological clinical cases diagnosed within the UOC laboratories of Pathological Anatomy at the AOU of Cagliari. Both the lectures and the presentation of clinical cases will include static and dynamic iconographic material, along with clinical, laboratory, and instrumental data, to illustrate the integrated histopathological-pathological diagnostic process. Teaching will be delivered in the classroom.

- Modalities of learning verification
The final assessment/examination will consist of a written examination and an interview. The written examination will include multiple-choice or open-ended questions. During the interview, the student will perform an organ diagnosis, which involves recognizing a histological preparation under an optical microscope, and discuss some topics proposed by the lecturer.

The evaluation criteria include:

a) Quality of knowledge
b) Skills demonstrated
c) Use of appropriate terminology
d) Ability to express oneself
e) Logical and synthesis skills
f) Ability to link concepts and knowledge

The final mark is expressed in thirtieths, and the test is passed with a minimum mark of 18/30. The final grade considers the following:

Quality of knowledge, skills, and competencies possessed and/or manifested:
a) Appropriateness, correctness, and congruence of knowledge
b) Appropriateness, correctness, and congruence of skills
c) Appropriateness, correctness, and congruence of competencies

Expressive Mode:
a) Expressive ability
b) Appropriate use of discipline-specific language
c) Logical ability and coherence in linking content
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse
e) Ability to synthesize
Grading Scale:
a) Sufficient (18-20/30): The candidate demonstrates limited knowledge, superficial understanding, many gaps, and modest expressive abilities, but sufficient to maintain a coherent dialogue. Logical abilities and topic connections are elementary; synthesis and graphical expression abilities are poor; interaction with the teacher during the interview is minimal.
b) Fair (21-23/30): The candidate shows reasonable acquisition of knowledge with few gaps; expressive abilities sufficient to maintain a coherent dialogue; acceptable mastery of scientific language; moderate logical abilities and topic connections; more than sufficient synthesis and graphical expression abilities.
c) Good (24-26/30): The candidate demonstrates a broad range of knowledge with moderate depth and small gaps; satisfactory expressive abilities and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis and acceptable graphical expression.
d) Very Good (27-29/30): The candidate has extensive, well-in-depth knowledge with minor gaps; considerable expressive abilities and high command of scientific language; remarkable dialogical ability, good logical synthesis competence; high capacity for synthesis and graphical expression.
e) Excellent (30/30): The candidate shows very extensive and thorough knowledge, with irrelevant gaps; high expressive abilities and excellent command of scientific language; exceptional dialogue skills, ability to make connections between different topics; excellent synthesis and familiarity with graphical expression.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, concept, or logic.

The final course grade is the average of the results from the questions on the main course topics.

- Reference texts
To be defined

INTEGRATED COURSE: HYGIENE AND STATISTICS

(7 CFU – 70 ore)

– Prerequisite:
Basic knowledge of microbiology

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING
The students will know the basic principles of epidemiology and statistics, the main health determinants, the main preventive and health promotions interventions and strategies, the basic reference principles of health care systems organization.
The students will know the basic principles of epidemiology and health management (including the mechanisms that determine equity of access to health care, effectiveness and quality of care). Know how to list and discuss the main determinants of health and disease, such as lifestyle, genetic, demographic, environmental, socio-economic, psychological and cultural factors in the population as a whole (this knowledge will be related to the state of international health and the impact of globalisation on it. Describe the main preventive interventions. To know the concepts of measurement and error and statistical methodologies for quantitative data analysis. To know the main concepts and tools of medical statistics applied to observational and experimental clinical studies, clinical epidemiology and basic studies. To know the concept of uncertainty in medicine by defining the role of probability and the concept of random variable and probability distribution for the interpretation of biological phenomena.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
The students will be able to apply knowledge to the understanding and management of health problems in groups and populations, also relating to new topics, set in broad and interdisciplinary contexts. To be able to apply knowledge to the understanding and resolution of health problems of groups and populations, also relating to new topics, set in broad and interdisciplinary contexts. To recognise the complexity of health problems of population and social groups between biological and socio-cultural determinants. To be able to take appropriate preventive and protective action against diseases, maintaining and promoting the health of the individual, the family and the community.
To know the basic reference principles of health care systems organisation, including policies, organisation, financing, cost restraints and principles of efficient management in the proper delivery of health care.
AUTONOMY OF JUDGEMENT:
Students will be able to use local, regional, and national data from demography and epidemiology in health decisions. They will be able to collect, organize and critically interpret new scientific knowledge and health/biomedical information from different resources and available databases. Students will be able to implement tailored prevention strategies and health promotion actions. To be able to carry out spatial, time and frequency measurements, to represent the results obtained in tabular and graphical form, to carry out an elementary statistical analysis of the results obtained with the above procedures, to carry out a probability assessment, to analyse a probability distribution and its fundamental parameters, to carry out a comparison of sample means and proportions by means of common and appropriate statistical tests, to evaluate the independence between events in contingency tables.

COMMUNICATION SKILLS:
Students be able to summarise and present information in a manner appropriate to the needs of the audience. Acquire the ability to present and communicate quantitative results. Ability to highlight and illustrate differences between results of different observations and treatments. To be able to collect, organise and critically interpret new scientific knowledge and health/biomedical information from different resources and available databases.
ABILITY TO LEARN:
Students will be able to formulate hypotheses, collect and critically assess data. They will be able to know the importance and limitations of scientific thinking and will be able to use this knowledge for disease prevention and health promotion. They will be able to develop appropriate preventive interventions against diseases, maintaining and promoting health. To be aware of the role of complexity, uncertainty and probability in decisions made during medical practice. To formulate hypotheses, collect and critically evaluate data in order to solve problems.

Contents:
DIDACTIC UNIT: MED/42 - HYGIENE AND PUBLIC HEALTH (5 CFU – 50 ore)
Definition, scope and uses of epidemiology
Defining health and disease
Health determinants
Descriptive epidemiology
Sampling methods
Cohort studies
Case-Control studies
Experimental studies
Selection and information bias
EBM: the Evidence-Based Medicine Pyramid
Establishing the cause of a disease: the concept, criteria for judging the evidence of causality, sufficient and/or necessary causes.
Levels of prevention: health promotion, primary, secondary and tertiary prevention.
Prevention strategies: high risk and population strategies.
Communicable diseases: definition, epidemiology and burden.
Sporadic, endemic, epidemic and pandemic patterns.
Chain of infection:
Infectious agent: pathogenicity, virulence, infective dose, reservoir and source transmission, carriers.
Transmission: vertical and horizontal transmission, direct and indirect transmission.
Transmission routes: airborne, fecal- oral route, parenteral transmission, sexual transmitted, vehicle-borne, vector borne, zoonoses.
Infectious diseases prevention and control: indirect and direct methods.
Primary prevention of infectious diseases: health education.
Notifying cases and epidemiological investigation
Isolation and contumacy.
Disinfection and sterilization.
Health care associated infection.
Hand hygiene
Surveillance.
Chemoprophylaxis.
Passive and active immunoprophylaxis.
Vaccines: definition, composition, herd immunity, objectives of vaccination strategies, safety and effectiveness.
National Vaccine Plan.

Vaccine schedule
Vaccines for healthcare workers
Communication on vaccines
Food Hygiene
Non-communicable diseases: definition, epidemiology and burden of the main preventable chronic diseases (cardiovascular diseases, respiratory diseases, cancer, diabetes), risk factors.
Common modifiable risk factors: unhealthy diet, physical inactivity, tobacco use, alcohol.
Primary prevention of non-communicable disease: health education strategies.
Health promotion for the prevention of non-communicable disease: definition, differences between health promotion and health education, the Ottawa Charter.
Health communication for the prevention of non-communicable diseases.
Secondary prevention of non-communicable diseases.
Screening: definition, principles, methodologies, mass and targeted screening, opportunistic screening .
Requirements for instituting a medical screening programme.
Validity of a screening test: sensitivity, specificity, positive and negative predictive value
Neonatal, cardiovascular and cancer screening
Health Organization principles.
Italian National Health System.
Core health care levels (LEA).
Health and environment: effects of environmental pollution (air, water, soil) on health, planetary health.

DIDACTIC UNIT: MED/01 - MEDICAL STATISTICS (2 CFU – 20 ore)
Measures, data, variables, frequencies, rate and proportions.
Graphical representations.
Probability calculation and probability distributions (Binomial, Poisson, Gauss).
Population and sample.
Central tendency and dispersion.
Standard error.
Confidence interval.
Statistical inference: hypothesis test, p value, statistical power
T test
Z test
Chi squared test
Correlation and regression

-Didactic methods
Interactive lectures

-Modalities of learning verification

The final assessment will be a written test consisting of two parts:

1. Statistics: 15 multiple-choice questions, with each correct answer worth 2 points.
2. Hygiene: 3 open-ended questions, each evaluated up to 10 points based on correctness, comprehensiveness, and appropriateness of terminology.

The test will last 80 minutes, with 60 minutes allocated for hygiene and 20 minutes for statistics.

The final grade, expressed in thirtieths, will be calculated as the weighted average of the scores obtained in the multiple-choice and open-ended questions.

-Reference texts
To be defined

INTEGRATED COURSE: SKIN AND VENEREOLOGY DISEASES AND PLASTIC SURGERY

(5 CFU – 65 ore)

– Prerequisite:
Analytical and problem-solving ability, autonomous learning of new knowledge, and critical processing of the information conveyed by the lecturer (Maastricht, 1999). Lessons attendance is mandatory.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
the student should know the main infectious, inflammatory and immune-mediated skin diseases, as well as neoplastic. Moreover, the issues related to first and second generation sexually transmitted diseases, their diagnostics, prophylaxis and principles of therapy will need to be examined in detail. As concern the plastic surgery, the student must know the epidemiology, risk factors and clinical manifestations of the main pathologies, as well the basis of treatment strategies, including basic surgical tecniques.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student will acquire methodological and instrumental application skills for a correct epidemiological approach to health/disease problems in the population and for the prevention of diseases in the individual and in communities, with particular reference to infectious syndromes in general, inflammatory and immune mediated skin diseases, neoplastic skin pathology, and all aspects of interest for plastic surgery intervention.
The student will have to acquire the ability to interpret symptoms and signs, functional and structural alterations, so as to arrive at a global assessment of the various pathological states from a preventive, diagnostic, therapeutic profile, in a unitary vision of the patient. The knowledge acquired from the study of systemic and specialist pathology would provide the ability to face the diagnostic and therapeutic path of the main pathologies knowing how to untangle between alternative hypotheses and differential diagnoses.
AUTONOMY OF JUDGMENT:
Interpretation and comparison of scientific data.
COMMUNICATION SKILLS:
Exhibition of data obtained from literature and reference texts, as well as scientific publications.
ABILITY TO LEARN:
Consultation of databases, publications and information sources accredited at national and international level.

-Contents:
DIDACTIC UNIT: MED/19 - PLASTIC SURGERY (1 CFU– 10 ore)
Introduction to the course (Definition, history, fields of application). Scarring and tissue repair (Pathological scars and dressings). Basic techniques (grafts and flaps). Skin neoplastic pathology (Etiology, clinic, diagnosis and therapy). Burns (General, classification, pathophysiology and therapy). Congenital malformations (Cephalic extremity, breast trunk and

region, hand, external genitalia). Outline of reconstructive surgery (Cephalic extremity, breast and trunk, upper limb and hand, lower limb and genitals). Outline of cosmetic surgery (hair transplantation, blepharoplasty, rhinoplasty, otoplasty, facelift, botulinum toxin, brachioplasty, cosmetic breast surgery, abdominoplasty, liposuction).

DIDACTIC UNIT: MED/35- SKIN AND VENEREOLOGY DISEASES (3 CFU– 30 ore)
Skin diseases:
Anatomy and physiology of the skin, elementary lesions.
Viral skin infections
Psoriasis
Pemphigus and pemphigoids
Lichen planus
Kaposi's disease
Piodermitis (bacterial skin infections)
Dermatophytosis, candidiasis,pyitiriasis versicolore.
Dermatozoonosis
Skin Leishmaniosis
Skin manifestations of connective diseases
Contact dermatitis, atopic dermatitis, urticaria, acne, rosacea, alopecia
Skin cancers, lymphomas.
Melanoma
Venereal Diseases:
Syphilis
Venereal ulcer/ chancroid; venereal lymphogranuloma
Blenorrhagia and non-gonococcal infections
Herpes genitalia
HPV infections

DIDACTIC UNIT: MED/35 - SKIN AND VENEREOLOGY DISEASES AND PLASTIC SURGERY INTERNSHIP (1 CFU– 25 ore)
- Recognise elementary lesions
- Formulate diagnostic hypotheses
- Acquire knowledge regarding the diagnosis and treatment pathway;
- Acquire knowledge regarding the choice of examinations to be performed and prescribe to the patient.
- Describe the clinical manifestations of the main skin diseases caused by bacteria, viruses, fungi and parasites of the skin and adnexa.
- Collect the medical history in a patient with dermatological pathology;
- Perform dermatological objective examination;
- Apply and remove sutures on simulators/silicon pads.

-Didactic methods

The course will be delivered through frontal lectures using PowerPoint presentations, as per the schedule published by the degree program. Lecture slides in PDF format will be accessible on the teaching platform for students with valid UNICA credentials. Active learning will be promoted by encouraging students to engage with review questions and conduct research using databases and scientific literature.

-Modalities of learning verification

The final examination comprises both written (preliminary and optional, at the instructor's discretion) and oral (semi-structured interview) components.

Mode of Evaluation:

Students' understanding of the fundamental principles of Skin, Venereal, and Plastic Surgery Diseases will be assessed with at least one question from the syllabus for each module of the integrated course. The final grade will be the weighted average of the individual assessments, reflecting the credit allocation of each module.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The evaluation will consider the following criteria:

- Knowledge of course topics
- Ability to connect different topics
- Expressive ability
- Use of appropriate terminology
- Ability to synthesize

Evaluation Criteria:

Quality of Knowledge, Skills, and Competencies:

a) Appropriateness, correctness, and congruence of knowledge
b) Appropriateness, correctness, and congruence of skills
c) Appropriateness, correctness, and congruence of competencies

Expository Mode:

a) Expressive ability
b) Appropriate use of discipline-specific language
c) Logical skills and coherence in linking content
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Ability to synthesize

Grading Scale:

a) Sufficient (18-20/30): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23/30): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26/30): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very Good (27-29/30): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

-Reference texts
To be defined

INTEGRATED COURSE: CLINICAL METHODOLOGY

(11 CFU – 140 ore)

– Prerequisite:
Knowledge of human anatomy, physiology, biochemistry.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student is required to acquire the methodologies aimed at collecting the clinical history and the physical examination of the patient. The student will learn how to perform the general objective examination, the physical examination of head and neck and cardiovascular, respiratory and gastroenteric systems, as well as kidney and urinary tract and skin. The clinical evaluation will be integrated with the main functional and instrumental methods of diagnostic imaging (ultrasound, echodoppler, MRI, CT, Nuclear Medicine) of the following organs and apparatus: cardiovascular, respiratory, thyroid, breast, oesophagus, stomach, small intestines, colon, liver and biliary tract, pancreas, kidney and urinary tract, arteries and veins, bone. The main pathophysiological mechanisms of the following diseases will be analyzed: portal hypertension, acid-base balance and hydro-electrolytic imbalances, clotting disorders as well as disorders of sodium, potassium, calcium and phosphorus metabolism. The clinical consequences of infections, trauma, shock, burns, digestive bleeding, intestinal occlusion, peritonitis and organ transplantation will be examined. The following topics will also be addressed: somatic and visceral pain, bronchial asthma, chronic obstructive pulmonary disease, pulmonary emphysema, pulmonary edema, acute and chronic heart failure and respiratory failure. It will also address the pathophysiology of hydro-electrolytic balance (homeostasis of sodium, potassium, calcium, phosphorus, magnesium) and alterations in the acid-base balance: respiratory and metabolic acidosis and alkalosis, shock, burns, the pathophysiology of intestinal occlusion, peritonitis and digestive hemorrhages, transplantation.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
The student should be able to combine the recognition of the signs of medical and surgical semeiotic with the correct request for diagnostic tests to confirm the clinical suspicion of a pathology following a correct radiological flow chart.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire anamnestic and physical data in order to formulate a basic diagnostic judgement in the context of gastrointestinal, cardiologic, and thoraco-pulmonary diseases.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:

DIDACTIC UNIT: MED/18 - GENERAL SURGERY (4 CFU– 40 ore)
Family history, physiological, past and recent pathological, history
General physical examination
Physical examination by inspection, palpation, percussion and auscultation. Examination of swellings and wounds. Examination of the neck: congenital pathologies, thyroid, salivary glands, lymph node stations. Examination of the chest: trauma, bronchial carcinoma, pleural effusion, pulmonary embolism, mediastinal syndromes.Examination of the breast. Examination of the abdomen: Evaluation of abdominal swelling; symptoms and signs of the most frequent abdominal diseases. Rectal examination. Abdominal trauma.
Examination of the liver and biliary tract; cholestatic jaundice Examination of abdominal hernias and genitals
Acute abdominal syndromes: Examination of bowel obstruction, peritonitis, acute pancreatitis, hemoperitoneum. Evaluation of digestive haemorrhages. Medical history and physical examination of chronic obliterative arteriopathies and venous insufficiency. Acute Ischemias of the limbs. Diuresis and urination disorders; hematuria.

DIDACTIC UNIT: MED/09 - INTERNAL MEDICINE (4 CFU– 40 ore)
Family history, physiological, past and recent pathological, history
General physical examination
Respiratory system: inspection, palpation, percussion, auscultation
Cough, Pneumonia, Bronchopneumonia, Chronic obstructive pulmonary disease, Pulmonary emphysema, Bronchial asthma, Pleuritis, Pneumothorax
Cardiovascular system: anamnesis, risk factors
Dyspnea. Thoracic pain (angina pectoris, myocardial infarction, aortic dissection, pulmonary embolism, esophagitis, musculo-tendinous pain, pneumothorax, pleuritis, ganglio-radiculitis)
Cardiovascular system: inspection, palpation, percussion, auscultation (auscultation areas). heart sounds, murmurs, clicks. Valvular defects: aortic stenosis and insufficiency, mitral stenosis and insufficiency, pulmunary stenosis and insufficiency, tricuspid stenosis and insufficiency, interatrial and interventricular defect, Botallo's duct patency. Acute pericarditis, cardiac tamponade. Arterial pulse and Venous pulse
Blood pressure measurement
Abdomen: inspection, palpation, percussion, auscultation Hepatomegaly, portal hypertension, Ascites
Alteration of skin color: jaundice, cyanosis, purple. Spleen: inspection, palpation, percussion; Splenomegalie
Kidney: physical and functional semeiology
Urination Disorders, Urine Examination
Hints of Osteoarticular Semeiology
Notes on Electrocardiography: sinus rhythm
Calculation of heart rate,QR axis,SECG Holter
Extrasystoles, arrhythmias,AMI
Respiratory system: Asthma, COPD, Emphysema, Pulmonary edema, Acute and chronic pulmonary heart, Respiratory insufficiency, Spirometry, Haemogasanalysis, Cyanosis

DIDACTIC UNIT: MED/36 - RADIOLOGICAL SEMEIOTICS (1 CFU– 10 ore)
Instrumental Methods, Ultrasound, Radiology, Angiography, CT, Endoscopy and Laparoscopy
Functional and instrumental thyroid semeiotics
Functional and instrumental breast semeiotics
a. Radiology
b. Ultrasound
c. Cytology and Biopsy.

Chest and mediastinum instrumental semiotics
Instrumental semiotics of esophagus, stomach, small intestine and colon. Functional and instrumental semiotics of liver and biliary tract:
-Ultrasound,
-TC
-Agobiopsy
- MRI
-CPRE
Instrumental semiotics of the pancreas. Functional and instrumental semiotics of the kidney and urinary tract
a. Urography and Ascending Pyelography
b. Cystoscopy
Instrumental semiotics of arteries and veins
a. Doppler and Ultrasound
b. Angiography
The program of the Radiological Semeiotics course includes the study of Flow Chart of Diagnostic Imaging, drawn up according to international guidelines, concerning the signs of clinical and surgical semeiotic pathologies

DIDACTIC UNIT: MED/18 - SURGERY INTERNSHIP (1 CFU– 25 ore)
- the approach with communication to the patient;
- the compilation of a medical record;
- the general objective examination;
- the objective examination of a tumefaction;
- the application of the practical principles of ultrasound;
- application of the practical principles of digestive endoscopy.
- the approach with communication to the patient;
- the collection of anamnestic data concerning physiological, family remote and forthcoming pathological history;
- the compilation of the medical record;
- the general objective examination;
- the objective examination of a tumefaction.
- the objective examination of the neck and thyroid gland;
- the objective examination of lymph node stations;
- the objective examination of the thorax;
- the objective examination of the breast;
- the objective examination of the abdomen;
- arterial pulse search and palpation;
- the lower limb vascular objective examination

DIDACTIC UNIT: MED/09 - INTERNAL MEDICINE INTERNSHIP (1 CFU– 25 ore)
- the approach with communication to the patient;
- the compilation of a medical record;
- the general objective examination;
- the application of the practical principles of electrocardiography;
- the application of the practical principles of EGA.
- the approach with communication to the patient;
- the collection of anamnestic data regarding physiological, family remote and forthcoming pathological history;
- the compilation of the medical record;
- the general objective examination;

- the objective examination of the thorax;
- the objective examination of the abdomen;
- the objective examination of lymph node stations;
- arterial pulse search and palpation

-Didactic methods

This course will be conducted through in-person lectures using PowerPoint presentations, alongside practical activities in inpatient, outpatient, and day hospital wards. Traditional lectures may be enhanced with innovative teaching methods designed to actively engage students through the analysis and interpretation of clinical cases (active learning). According to the Manifesto of Studies for the Academic Year 2020-2021 (pg. 12), "instruction will be delivered in a hybrid format, allowing students to attend classes either in person or online. Students must select their preferred learning mode at the beginning of the semester, which will remain binding for the entire term.

-Modalities of learning verification

The final examination for the course will consist of either a written or oral test:

- Written Test: Multiple-choice questions covering various sections of the program.
- Oral Test: Open-ended questions, including clinical case discussions.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The final grade, expressed on a scale of 30, will be determined by the Board of Examiners based on assessment from each module of the Integrated Course, including the tutor's evaluations of clinical skills acquired during internships. A passing grade is achieved with a score of at least 18/30. Evaluation criteria include knowledge of course topics, expressive ability, use of appropriate terminology, and synthesis skills.

Evaluation Criteria
Quality of Knowledge, Skills, Competencies possessed and/or manifested:

a) Appropriateness, correctness, and congruence of knowledge.
b) Appropriateness, correctness, and congruence of skills.
c) Appropriateness, correctness, and congruence of competencies.

Expository Mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in linking content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Ability to synthesize.

Grading Scale

a) Sufficient (18-20/30): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a

coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.

b) Fair (21-23/30): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26/30): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very Good (27-29/30): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

-Reference texts
To be defined

4 YEAR 1 SEMESTER

INTEGRATED COURSE: MEDICAL SURGICAL CLINIC OF THE SENSORY SYSTEM

(9 CFU – 120 ore)

– Prerequisite:
It is considered indispensable to have a background knowledge in Embryology and Anatomy of the head and neck (face, jaw, ear, nasal cavity, paranasal sinuses, pharynx, larynx, orbital cavity, eyes), Pharmacology, Pathology and Pathological Anatomy.
The attendance to Otorhinolaryngology, Dental diseases and Ophthalmology classes is required. In addition, four days of ward shadowing/e-learning for ENT (2 days), and Ophthalmology (2 days) will be scheduled for every student for at Policlinico Universitario, Monserrato.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student is required to know the epidemiology, risk factors and principal clinical manifestations of ENT, dental and ophthalmic diseases, focusing mainly oncologic diseases and most common emergencies. Additionally, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

The aim of the course is providing the acknowledgements about the main ENT, dental and ophthalmic diseases, with a particular focus on head and neck oncology. At the end of the course, the attending student should have learnt both diagnostic and therapeutic (either medical or surgical) work-ups of the main ENT, dental and ophthalmic diseases. A basic knowledge of audiologic and principles of ear surgery is required, given the high specialization field.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of ENT diseases.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

Contents:
DIDACTIC UNIT: MED/30 - DISEASES OF THE VISUAL SYSTEM (3 CFU – 30 ore)
OPHTHALMOLOGY ANATOMY OF THE VISUAL APPARATUS-PHYSIOLOGY OF THE VISUAL APPARATUS: function and visual acuity; Luminous and chromatic sense. Physiology of extraocular muscles; Binocular and stereoscopic vision; Accomodation. SEMEIOLOGY OF THE OCULAR SYSTEM: Ophthalmoscopy; Schiascopia; Tonometry; Campimetry. DISEASES OF THE EYELIDS: Classification - Disorders of motility of the eyelids. Altered position of the edges of the eyelids, Blepharitis, Eyelid tumors and injuries. DISEASES OF THE CONJUNCTIVE: Classification. Conjunctivitis. DISEASES OF THE GLAND AND LACRIMAL TRAITS. DISEASES OF THE CORNEA AND SCLERA: Congenital alterations; inflammatory; degenerative. DISEASES OF THE UVEA: Inflammatory processes; Tumors. CRYSTALLINE DISEASES: Cataracts. GLAUCOMA: General; Acute glaucoma; simple chronic; congenital; secondary; Glaucoma therapy. VICES OF REFRACTION AND ACCOMODATION DISORDERS: Hyperopia; Myopia; Astigmatism; Correction of refractive errors; Anisometropic amblyopia; Presbyopia. DISEASES OF THE RETINA: General classification, diabetic and angiosclerotic retinopathy; Retinal detachment; Retinal degenerations; Retinal tumors. PATHOLOGY OF THE OPTICAL NERVE AND OPTICAL TRACT: Neuritis; Vascular papillary edema; mechanical inflammation; Optic atrophies; Hemianopias; Chiasmatic syndrome. ORBITAL DISEASES: Exophthalmos. PATHOLOGY OF EYE MOTILITY: concomitant and paralytic squint; Amblyopia.

DIDACTIC UNIT: MED/28 - ODONTOSTOMATOLOGICAL DISEASES (1 CFU – 10 ore)
DENTAL DISEASES Introduction to Dentistry - Generalities on the stomatognathic system - anatomical considerations. Teeth and dental tissues. Pathologies of dental origin: a- Caries, b- Endodontic infection (abscesses and phlegmon, odontogenic sinusitis). The focal infection theory. c-Periodontitis. Diagnosis by images. Disodontiasis. Mucositis. Dental traumatology and immediate rescue Dental therapies and anti-bone resorption drugs. Dentistry on patients with cardiovascular problems. Cardiovascular prevention and dental infections, international guidelines. Dentistry on immunocompromised patients and patients with coagulation problems. Pathologies and dental procedures in pregnancy. Tumors of the oral cavity. Emergencies and drug therapy of dental pain and infections

DIDACTIC UNIT: MED/31 - Otolaryngology (3 CFU – 30 ore)
OTORHINOLARYNGOLOGY RINOLOGY. Anatomy, physiology, clinical presentation and instrumental semeiotics, inflammatory and tumor pathology of the nose and para-nasal sinuses. LARYNGOLOGY. Anatomy and physiology, semeiotics and instrumental study of the larynx. Trauma of the larynx. Acute and chronic laryngitis. Benign and malignant growths of the larynx.

Dysphonia. Phonosurgery. Staging of malignant laryngeal neoplasms. Surgical and non-surgical treatment of malignant tumors of the larynx. Foreign bodies of the airway. Dyspnea, tracheotomy and crico-thyrotomy. PATHOLOGIES OF THE ORAL CAVITY, PHARYNX AND NECK. Anatomy and physiology, clinical and instrumental semeiotics of the upper aerodigestive tracts. Chronic obstructive pathology of the upper aerodigestive tract in pediatric age. Acute and chronic nasopharyngitis and tonsillitis. Gastro-oesophageal reflux diseases. Head and neck, oral cavity and pharynx oncology: staging and therapy. PATHOLOGY OF THE SALIVARY GLANDS. Acute and chronic sialadenitis, Autoimmune -diseases, Benign and malignant neoplasms. PATHOLOGY OF THE EAR. Anatomy, physiology, clinical and instrumental semeiotics, of the EAR. Etiology, clinical presentation, treatment, possible complications of the pathologies of the external middle and inner ear. Congenital and acquired deafness / hearing loss. Otosclerosis, sudden hearing loss. Presbycusis. Acoustic rehabilitation of deafness. Ear malformation pathology. Paralysis of the facial nerve. Vestibula pathologies.

DIDACTIC UNIT: MED/30 - INTERNSHIP 1 (1 CFU – 25 ore)
- Routine eye examination procedures
- Evaluation of instrumental investigations (slit-lamp examination, tonometry, visual field, OCT, FAG)
- Correlation between clinical picture and multimodal imaging
- Patient management
- Therapeutic approach
- Asepsis procedures and preparation for surgical procedure
- Operating times for certain surgical procedures (cataract, retinal detachment, macular pucker, macular hole)
- Visual acuity examination, slit-lamp examination and tonometry
- Doctor-patient communication
- Complete eye examination
- Performing instrumental examinations (OCT, FAG, visual field)
- Preparation of operating field for surgical procedure
- Surgical dressing

DIDACTIC UNIT: MED/31 - INTERNSHIP 2 (1 CFU – 25 ore)
- Invasive diagnostic procedures and therapy.
- Assessment of instrumental findings
- Assessment of audiometric and vestibular findings
- Correlation between clinical picture and radiological findings in the head and neck region
- Doctor-patient communication
- ENT examination
- Otoscopy
- Pharyngoscopy
- Rhinoscopy
- Surgical dressing
- Learning the asepsis procedures of the operating theatre, knowing how to participate in a surgical procedure as second assistant and prepare the
for the surgical procedure.
- Know the necessary investigations for patients admitted for hearing loss
sudden hearing loss, acute vertigo, abscesses of the head and neck region and for patients hospitalised in anticipation of surgery.
- Learning the protocols of antibiotic therapy and prophylaxis of
thromboembolism in post-operative management.

-Didactic methods

The course will be conducted through in-person lectures using PowerPoint presentations, alongside practical activities in inpatient, outpatient, and day hospital wards at the department of Otolaryngology – AOU of Cagliari. Traditional lectures may be enhanced with innovative teaching methods designed to actively engage students through the analysis and interpretation of clinical cases (active learning).

-Modalities of learning verification

The final examination for the course will consist of either a written or oral test:

- Written Test: Multiple-choice questions covering various sections of the program.
- Oral Test: Open-ended questions, including clinical case discussions. NB originale: Oral test: the student must answer 1-2 open-ended questions on three of the different topics in the program also presented in the form of a clinical case. Each question is scored from 0 to 10. In both cases the final grade is expressed in thirtieths. The test is passed if a grade of at least

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The final grade, expressed on a scale of 30, will be determined by the Board of Examiners based on assessment from each module of the Integrated Course, including the tutor's evaluations of clinical skills acquired during internships. A passing grade is achieved with a score of at least 18/30. Evaluation criteria include knowledge of course topics, expressive ability, use of appropriate terminology, and synthesis skills.

Evaluation Criteria
Quality of Knowledge, Skills, Competencies possessed and/or manifested:

a) Appropriateness, correctness, and congruence of knowledge.
b) Appropriateness, correctness, and congruence of skills.
c) Appropriateness, correctness, and congruence of competencies.

Expository Mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in linking content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Ability to synthesize.

Grading Scale

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable

command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.

c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.

d) Very Good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.

e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

-Reference texts

To be defined

INTEGRATED COURSE: IMAGE-BASED DIAGNOSIS

(5 CFU – 65 ore)

– Prerequisite:

Prior knowledge of anatomy and physiology of the central and peripheral nervous system and senolog

- Learning objectives:

KNOWLEDGE AND UNDERSTANDING:

The student must demonstrate appropriate knowledge and comprehension skills of the main imaging and nuclear medicine diagnostic procedures.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

The student must be able to apply acquired knowledge and utilize imaging techniques appropriately.

AUTONOMY OF JUDGEMENT:

The student must be able to make autonomous evaluations through correct interpretation of information acquired in the fields of imaging and nuclear medicine.

COMMUNICATION SKILLS:

the student must be able to present information effectively and discuss clinical cases in the field of imaging and nuclear medicine

ABILITY TO LEARN:

The student must be able to effectively collect information necessary to the development of curricular skills.

-Contents

DIDACTIC UNIT: MED/36 - DIAGNOSTIC IMAGING AND RADIOTHERAPY (4 CFU – 40 ore)

The integrated course Diagnostic Imaging 4 consists of 3 modules with 5 CFU in total:

Diagnostic Imaging and Radiotherapy with 30 face-to-face teaching hours

Nuclear Medicine with 10 face-to-face teaching hours

The syllabus of the integrated course divided into the different modules is:

Radiodiagnostics:

1.Principles and application of conventional radiology

2.Principles of Computed Tomography operation

a.Differences between the various CT generations

b.Potentialities

c.Limitations

d.Contraindications

e.Biological damage

3.Operating principles of ultrasound

4.Operating principles of Magnetic Resonance Imaging

a.Potentialities

b.Limits

c.Contraindications

5.Contrast media in CT, MRI and ultrasound (microbubbles)

a.Rationale for their use and advantages

b.Risks and contraindications

6.Breast imaging

a.Mammography - Ultrasound - Magnetic Resonance Imaging

7.Neuroradiological Imaging

a.The stroke (CT-RM)

b.The study of the supra-aortic trunks

c.Cerebral heteroplasias

d.Cranio-brain spinal cord trauma

e.White matter diseases

f.Neuroimaging of dementias

8. Lung imaging

a.Study of lung neoplasms (primary and secondary)

b.Phlogistic pathology of the lung (bacterial and viral)

c.Diffuse interstitial diseases

9.Cardiac Imaging

a.Cardiac CT: general principles, field of application and limits

b.Cardiac MRI: general principles, scope and limits

10.Abdominal Imaging

a.Imaging of the liver (diagnostic flow-chart and characterisation of diffuse and focal lesions)

b.Imaging of the gallbladder and bile ducts (diagnostic flow-chart and characterisation of calcinosis, VBP dilatations and heteroplasias of the gallbladder and bile ducts)

c.Imaging of the digestive system (small and large intestine; chronic inflammatory bowel disease; rationale and modalities of virtual colonoscopy; tumours; diverticular pathology)

DIDACTIC UNIT: MED/36 - INTERNSHIP (1 CFU – 10 ore)

Diagnostic procedures through:

- CT;
- Ultrasound;
- MRI;

- Traditional radiology;
- Nuclear Medicine.
- Interpretation of traditional radiology images

-Didactic methods

Interactive lectures involving student participation in the evaluation of radiological images, aimed at enhancing understanding of the topics covered. Computer aids and video projections will support classroom learning. Professionalizing internship within the department under the tutors' guidance.

-Modalities of learning verification

Assessment during examinations focuses on:

- Acquisition of knowledge and understanding of radiological processes.
- Proficiency in the disciplinary language.
- Ability to relate concepts and knowledge applying behavioral protocols and making diagnostic decisions.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The final grade is determined by the Board of Examiners, considering assessment from each module in the Integrated Course and clinical skills evaluation by the tutor during internships.

Examination formats include written or oral tests, as specified in the academic calendar published at the beginning of the academic year. WRITTEN TEST: Closed-ended questionnaire with 30 multiple-choice questions. Each correct answer scores 1 point, with 0 points for incorrect or unanswered questions. A score below 18/30 is considered insufficient.
ORAL TEST: Structured interview, with single evaluations given by the teachers of the Integrated Course Commission on the results of the overall performance. In both cases the final grade is expressed in thirtieths, with a passing mark of at least 18/30.
Final mark considerations
Quality of knowledge, skills, and competencies possessed and/or manifested:

a) Appropriateness, correctness, and congruence of knowledge.
b) Appropriateness, correctness, and congruence of skills.
c) Appropriateness, correctness and congruence of competencies

Expository mode

a) Expressive ability
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in connecting content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Ability to synthesize

Grading scale:

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very Good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

Reference texts
To be defined

INTEGRATED COURSE: HEMATOLOGY AND CLINICAL ONCOLOGY

(9 CFU – 120 ore)

– Prerequisite:
A good knowledge of physiopathology is a fundamental prerequisite to better define the clinical and semeiological characteristics of the various oncological and haematological diseases. Understanding the genetic basis underlying the various oncological and blood lymphoproliferative processes.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student shall be able to evaluate patients' health status from the preventive, diagnostic, therapeutic and rehabilitative point of view, and integrate the contributions of systematic pathology and specialized medicine in oncology, hematology and oncohematology fields in a unitary vision of an individual suffering from a specific disease.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student must be able to apply both diagnostic and therapeutic strategies of oncology, hematology and oncohematology diseases. In addition, he is required to critically analyze and evaluate alternative hypothesis and differential diagnosis. The student must therefore be able to rationally and efficiently choose among the available diagnostic tools in order to reach a final and correct diagnosis and to subsequently choose the right therapy.
AUTONOMY OF JUDGEMENT:

The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of oncology, hematology and oncohematology diseases.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

Contents:
DIDACTIC UNIT: MED/41 - Palliative Care (1 CFU – 10 ore)
Why palliative care ? Ethical principles underlying palliative care. Patients for whom they are intended . Communication of diagnosis and prognosis. Early palliative care. Treatment of nausea, vomiting and constipation. Pain treatment. Principles of nutrition and food supplementation. Treatment of anemia, renal failure, ascites and pleural effusion. Treatment of delirium, depression and anxiety . Degrees of sedation: intermittent, deep and terminal. Accompaniment to death

DIDACTIC UNIT: MED/15 - HEMATOLOGY (3 CFU – 30 ore)
1) Hematology lesson plan
Hemopoiesis. Hyporegenerative Anemias. Thalassemia syndromes and hemoglobinopathies. Hemolytic Anemias. Bone Marrow Aplasia. Myelodisplasias. Acute Leukemias. Chronic Myeloid Leukemia. Ph- Chronic Myeloproliferative Neoplasias. Hodgkin's Lymphoma. Non-Hodgkin's Lymphoma. Chronic Lymphatic Leukemia. Monoclonal Gammopathies. Multiple Myeloma. Stem Cells and logical transplant principles. CID. Thrombocytopenias. Thrombotic Microangiopathies. Problem approach. Urgencies and emergencies in hematology. Clinical cases

DIDACTIC UNIT: MED/06 - MEDICAL ONCOLOGY (3 CFU – 30 ore)
2) Oncology lessons plan
Epidemiology of solid tumors: risk factors. Primary and secondary prevention of cancer. Chemoprevention of cancer. Principles of cell proliferation and drug-resistance. Principles of tumor dissemination and metastatization. Tumor staging. General prognostic and predictive factors of cancer. Antiproliferative drugs: class, mechanism of action and toxicity. Targeted agents. Chemotherapy indications: neoadjuvant, adjuvant, curative, palliative setting. Principles regulating controlled clinical trial. Assessment of therapeutic response. Follow-up in Medical Oncology. Breast cancer. Lung cancer. Colorectal cancer. Gynecological Malignancies (cancer of the endometrium, carcinoma of the cervix). Prostate cancer. Neoplasms of the head and neck. Oncological emergencies. Pathogenesi of pain in oncology and treatment. Geriatric Oncology: multidimensional geriatric assessment. Supportive therapies in oncology. Palliative care. Cancer cachexia.
Epidemiology of Cancer and cancer statistics. Primary and secondary prevention, screening programs active and their characteristics. General concepts of staging, TNM. Guidance to medical treatment / surgery / radiotherapy. General concepts on how the overall assessment of the patient with cancer. General Concepts of chemotherapy, combination chemotherapy, single-agent chemotherapy, neo-adjuvant chemotherapy, adjuvant, palliative.Evalutation's Criteria of response to chemotherapy. Main side effects of chemotherapy drugs. General concepts of clinical trials, experimental trials in vitro, in vivo, studies of phase I, II, III, IV. Geriatric Oncology. Epidemiology, risk factors, diagnosis, pathology, staging, treatment of the following

cancers: Breast cancer, lung cancer, colorectal cancer, ovarian, cervix and uterine cancer, head and neck cancer, prostate cancer, bladder cancer, seminomas.

DIDACTIC UNIT: MED/15 - HEMATOLOGY INTERNSHIP (1 CFU – 25 ore)
During the internship experience the student will acquire practical skills related to the knowledge acquired in the teaching unit Hematology

DIDACTIC UNIT: MED/06 - MEDICAL ONCOLOGY INTERNSHIP (1 CFU – 25 ore)
During the internship experience the student will acquire practical skills related to the knowledge acquired in the teaching unit Medical Oncology

-Didactic methods
The course will be conducted through in-person lectures using PowerPoint presentations, alongside practical activities in inpatient, outpatient, and day hospital wards and within the rooms where procedures such as bone marrow needle aspiration, osteo-medical biopsy, and peripheral and bone marrow blood smear are performed. Traditional face-to-face lectures may be enhanced with innovative teaching methods designed to actively engage students through the analysis and interpretation of clinical cases (active learning).

-Modalities of learning verification
The final examination for the course will consist of either a written or oral test:

- Written Test: Multiple-choice questions covering various sections of the program.
- Oral Test: 3 open-ended questions on 3 of the different topics in the programme, also presented as clinical case discussions.

A passing grade is achieved with a score of at least 18/30.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The final grade, expressed on a scale of 30, will be determined by the Board of Examiners based on assessment from each subject or module in the Integrated Course, including the tutor's evaluations on clinical skills acquired during internships.

Evaluation criteria include knowledge of course topics, the ability to formulate diagnostic hypotheses and test them by setting up an appropriate diagnostic program. Non-specialist knowledge of therapies related to the various diseases examined will also be assessed. Expressive ability, use of appropriate terminology, and synthesis skills will be evaluated.
Evaluation Criteria
Quality of Knowledge, Skills, Competencies:

a) Appropriateness, correctness, and congruence of knowledge.
b) Appropriateness, correctness, and congruence of skills.
c) Appropriateness, correctness, and congruence of competencies.

Expository Mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in linking content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.

e) Ability to synthesize.

Grading Scale

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very Good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

-Reference texts

To be defined

GENERAL PHARMACOLOGY

(5 CFU – 50 ore)

– Prerequisite:

Basic notions of biochemistry, physiology, general pathology

- Learning objectives:

KNOWLEDGE AND UNDERSTANDING: -
- to learn the fundamental principles of drug action and the various molecular and cellular mechanisms which mediate the therapeutic effects and the aversive drug reactions;
- to understand that the efficacy of drug therapy is evaluated through the analysis of laboratory and clinical data obtained by studying the patient pathological condition;
- to understand how the pharmacokinetic processes, the genetic profile,and the pathological condition can affect the outcome of pharmacological therapy;

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

The student will acquire methodological and instrumental application skills for a correct approach to drug therapy

AUTONOMY OF JUDGMENT:

The student will learn to critically interpret and compare scientific data and clinical studies on drugs.

COMMUNICATION SKILLS:

The student will learn to communicate information on drug therapy to patients and will acquire

skills to discuss the appropriateness of drug therapies.
ABILITY TO LEARN:
Consultation of databases, publications and information sources accredited at national and international level.

-Contents:
BIO/14 - GENERAL PHARMACOLOGY (5 CFU – 50 ore)
Principles of pharmacokinetics. Volume of distribution,plasma half-life and clearance of a drug. Drug absorption, distribution, metabolism and elimination. Bioavailability. Mono-and multi-compartment models.Pharmacokinetic mechanisms of drug interaction.Routes of drug administration and methods of drug delivery. Bioequivalence.Single and repeated administration of drugs. First-order and zero-order elimination kinetics.Dosing rate. Therapeutic window. Loading dose. Genetic determinants of individual drug response. Phases of drug metabolism. Inhibition and induction of drug metabolism. Polymorphisms in drug metabolizing enzymes. Drug elimination by the liver and the kidney. Drug-receptor interaction. Receptor agonists and antagonists. Relationship between drug concentration and drug action.Metabotropic and ionotropic receptors. Receptor signal transduction. Receptor adaptation. Population pharmacodynamics. Adrenergic transmission and drugs acting on catecholamine synthesis. Adrenergic receptors. Agonists and antagonists of alpha- and beta-adrenergic receptors. Direct and indirect sympathomimetic amines. Drugs acting on monoamine transporters. Muscarinic acetylcholine receptors and their agonists and antagonists. Acetylcholinesterase inhibitors. Nicotinic receptors. Pharmacological actions of nicotine. Drugs acting at the neuromuscular junction and autonomic ganglia. Serotonin receptor agonists and antagonists. Drugs used to treat Parkinson's disease and other neurodegenerative disordes. Antipsychotic and antidepressive drugs. Mood stabilizers. Antiepileptic drugs. Hypnotics and sedatives. Drug of abuse. Drugs used to treat drug addiction. Opiods analgesics. Opioid receptor antagonists. Local anesthetics.
General principles of anti-microbial therapy. Rational selection of an antimicrobial agent. Mechanisms of action of antibiotics. Mechanisms of resistance to antimicrobial agents. Prophylactic use of antimicrobial agents. Use of antibiotics during pregnancy. Trimethoprim-sulfamethoxazole. Fluoroquinolones. Natural and semisynthetic penicillins.Cephalosporins.Carbapenems and monobactams. Beta-lactamase inhibitors and their association with beta-lactam antibiotics. Vancomycin and teicoplanin. Aminoglycosides. Tetracyclines and glycylcyclines.Macrolides and ketolides. Chloramphenicol. Quinupristin/dalfopristin. Linezolid and tedizolid. Daptomycin. Drugs used to treat tuberculosis. Antiviral agents.

-Didactic methods
The course will feature frontal lectures with PowerPoint presentations and practical exercises focusing on methods for recognizing adverse drug reactions. These lectures will be complemented by innovative teaching methods aimed at actively engaging students in the learning process through reflective exercises and review questions on previously addressed topics (active learning).

-Modalities of learning verification

The final examination will consist of either a written test or an oral examination:

- Written Test: Students will answer multiple-choice and open-ended questions covering all topics in the course syllabus.

- Oral Examination: Students will respond to open-ended questions based on selected topics from the programme.

The final grade, determined collegially by the faculty members of the Examination Board, will be expressed in thirtieths. A minimum grade of 18/30 is required to pass. Students will have to discuss the topics proposed by the lecturer using diagrams/graphic representations where necessary. Evaluation criteria include knowledge of course topics, ability to connect different concepts, expressive skills, use of appropriate terminology, and synthesis ability.

Final Grade Considerations
The final grade considers:

a) Quality of knowledge, skills, and competencies possessed and/or manifested.
b) Appropriateness, correctness and congruence of knowledge
c) Appropriateness, correctness and congruence of skills
d) Appropriateness, correctness and congruence of competencies.

Expository mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in connecting content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Synthesis ability.

Grading scale:

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

-Reference texts
To be defined

INTEGRATED COURSE: NEUROLOGY AND NEUROSURGERY

(5 CFU – 65 ore)

– Prerequisite:
Prior knowledge of neuroanatomy and neurophysiology of the central and peripheral nervous system is suggested to reach a fruitful course attendance.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student is required to know the epidemiology, risk factors, and principal clinical manifestations of nervous sistem's diseases. Additionally, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.
To that, knowing and understanding the basic notions and interventions of neurology, neurosurgery needed for project drafting, and the interventions evaluations (identification, diagnosis, prognosis, and therapeutic approach). In particular, know and understand the role of the physician in the management team of the person with neurological and neurosurgical diseases. Identifying the specific assessment instruments of the physician (about structures and functions, activities and participation), validated and reliable, and clinical observation. Formulating diagnosis; identify the prognosis and define the therapy also about the gradient of modifiability of the problems.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student must be able to apply both diagnostic and therapeutic strategies of neurological disorders, participate with his own specific expertise in the design of a program of care of the person with neurological disease in collaboration with other health professionals. Formulate, through reasoning, clinical goals to be achieved. Define the contingency plan about objectives. Identify aids and orthotics useful to the achievement of personal autonomy. Identify the specific characteristics of the physician in the neurological setting team.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data to formulate a diagnostic judgment in the context of neurology and neurosurgery. Critically examine the aims and methods of assessing the results obtained
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions. Analyze the main channels and communication techniques to define the most appropriate methodology in the context analyzed. Planning, implementing, and evaluating the results of the communication strategy used. In particular, acquire the ability to communicate information, problems, and solutions with the team members, patients, and families
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background critically through the consultation and interpretation of recent scientific literature

-Contents:
DIDACTIC UNIT: MED/27 - NEUROSURGERY (1 CFU – 10 ore)

Anatomy of the central and peripheral nervous system. Pathophysiology of the liquor system, intracranial hypertension, syndrome Hydrocephalus Monitoring of endocranial pressure. SNC Malformations. Management of head and spine injuries. Endocranial and Spina neoformation: classification, histogenesis, and topographic classification. The management of spinal tumors. The management of cranial tumors. The management of vascular malformation. The degenerative disease of the Spine. Cerebrovascular arterial and venous system. Subarachnoid hemorrhage (causes and management). Midollar compression.
CT and MRI indications. General features of SNC surgical disease at CT and MRI.

DIDACTIC UNIT: MED/26 - NEUROLOGY (3 CFU – 30 ore)
Organization of the motor system, sensitive system, cranial nerves, pain and headache, movement disorders, neuromuscular disorders, motoneuron diseases, neuropathy, neurodegenerative diseases. Cerebrovascular disease. Inflammatory disease of SNC. Demielinisations disease. Epileptic syndromes.
Morphofunctional organization of the cerebral cortex. Primary sensory and association areas. Sensory-motor integration. Basic principles of electroencephalography (EEG). Analysis of the main rhythms of the electroencephalogram.
Behavioral states. The wake-sleep cycle. Physiological regulations during sleep. Role of the hypothalamic suprachiasmatic nucleus in the organization of the behavioral circadian rhythms

DIDACTIC UNIT: MED/26 - INTERNSHIP (1 CFU – 25 ore)
- Approach to the head injury patient;
- Clinical approach to the patient with cerebrovascular disease;- Clinical approach to the patient with multiple sclerosis and other demyelinating diseases;
- Clinical approach to the patient with neurodegenerative diseases (dementia etc.),
- Clinical approach to the patient with muscle and nerve diseases.

-Didactic methods
The course will feature face-to-face lectures using PowerPoint presentations and practical sessions within the inpatient, outpatient, and day hospital settings. Frontal lectures will be complemented by innovative teaching methods designed to actively engage students in the learning process (active learning), focusing on the analysis and interpretation of clinical cases. As per the Manifesto of Studies for the Academic Year 2020-2021 (pg.12), “teaching will be delivered in a hybrid format, allowing students to participate either in-person or online. The choice will be binding for the entire semester.
Course Structure

- Lecture and clinical case discussions (30 hours in neurology, 8 hours in neurosurgery)
- Internship (20 hours): Ward attendance involving neurological examination, lumbar puncture, muscle biopsy, and interpretation of neurophysiological and neuroradiological examinations
- Video resources provided by lecturers

-Modalities of learning verification

The final examination will be conducted orally by a single committee comprised of lecturers from each discipline of the Integrated Course. This assessment aims to evaluate the students' theoretical knowledge gained from lectures and their ability to apply theoretical concepts in real clinical scenarios. The final grade is determined based on the adequacy of responses, particularly in describing at least two out of three topics covered in the syllabus.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The Board of Examiners will assess each subject or module of the Integrated Course, including the tutor's evaluation of clinical skills acquired during the internship.

Grades will be expressed in thirtieths, with a minimum passing grade of 18/30.
The final grade considers:
Quality of knowledge, skills, and competencies possessed and/or manifested

a) Appropriateness, correctness and congruence of knowledge
b) Appropriateness, correctness and congruence of skills
c) Appropriateness, correctness and congruence of competencies

Expository mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in connecting content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Synthesis ability.

Grading Scale

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics; excellent synthesis skills.

Honors are awarded to candidates who are clearly above average, with irrelevant limitations in knowledge, expression, conceptual, or logical skills.

-Reference texts

To be defined

4 YEAR 2 SEMESTER

INTEGRATED COURSE: DISEASES OF THE RESPIRATORY SYSTEM AND THE CARDIOVASCULAR APPARATUS

(12 CFU – 165 hours)

– Prerequisite:

The students should know anatomy and pathophysiology of respiratory and cardiovascular systems as well as the principles of semiotic indispensable to learn those specific to these systems. It would be useful to have already passed the examination of "Patologia e Fisiopatologia" and "Metodologia clinica"

- Learning objectives:

Aim of the integrated course of respiratory and cardiovascular diseases is to offer to the students the following knowledges and skills:

KNOWLEDGE AND UNDERSTANDING:

The student is required to know the epidemiology, risk factors and principal clinical manifestations of respiratory and cardiovascular diseases. Moreover, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

the student should be able to apply both diagnostic and therapeutic strategies in the principal respiratory and cardiovascular diseases. In addition, he is required to critically analyze and evaluate alternative hypotheses and differential diagnoses. The student should therefore be able to rationally and efficiently choose among the available diagnostic tools in order to reach a final and correct diagnosis and to subsequently choose the right therapy.

AUTONOMY OF JUDGEMENT:

The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of respiratory and cardiovascular diseases.

COMMUNICATION SKILLS:

The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.

ABILITY TO LEARN:

The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:

DIDACTIC UNIT: MED/21 - THORACIC SURGERY (1 CFU – 10 hours)

Peripheral obstructive arterial disease

Acute arterial ischemia

Acute and chronic mesenteric ischemia

Aortic abdominal and thoracic aneurysms

Peripheral arterial aneurysms: subclavian and popliteal aneurysms

Visceral arterial aneurysms: splenic, hepatic, renal and mesenteric aneurysms

Dissecting aortic aneurysm

Extracranial carotid and vertebral disease
Thoracic outlet syndrome
Chronic venous disease
Deep venous thrombosis and its complications

DIDACTIC UNIT: MED/22 - VASCULAR SURGERY (1 CFU – 10 hours)
Peripheral obstructive arterial disease
Acute arterial ischemia
Acute and chronic mesenteric ischemia
Aortic abdominal and thoracic aneurysms
Peripheral arterial aneurysms: subclavian and popliteal aneurysms
Visceral arterial aneurysms: splenic, hepatic, renal and mesenteric aneurysms
Dissecting aortic aneurysm
Extracranial carotid and vertebral disease
Thoracic outlet syndrome
Chronic venous disease
Deep venous thrombosis and its complications

DIDACTIC UNIT: MED/10 - DISEASES OF THE RESPIRATORY SYSTEM (3 CFU – 30 hours)
- Evaluation of patients suffering respiratory diseases
- Physiopathology and indications of the diagnostic investigations and measures to evaluate pulmonary function, particularly pulmonary function test, bronchial challenge test, DLCO, arterial blood gas test,
- Definition, physiopathology, classification, diagnosis and treatment of acute and chronic respiratory failure
Respiratory diseases
Acute and chronic obstructive pulmonary diseases
Bronchiectasis
Obstructive Sleep Apnea Syndrome (OSAS)
Pulmonary infections
Tuberculosis
Environmental lung diseases
Lung and mediastinal tumors
Pleural diseases
Respiratory Failure
Vascular diseases
Diffuse interstitial lung disease
Lung role in the systemic autoimmune diseases (IPAF)

DIDACTIC UNIT: MED/11 - DISEASES OF THE VASCULAR SYSTEM (4 CFU – 40 hours)
Cardiovascular diseases
Atherosclerotic disease: epidemiology, risk factors, clinical presentation, primary and secondary prevention.
Arterial hypertension
Angina pectoris and acute myocardial infarction. Coronary angioplasty and intracoronary stents
Pericardial diseases
Myocarditis
Cardiomyopaties
Valvular heart diseases. Interventional therapies. Prosthetic valves.
Congenital heart diseases
Infective endocarditis. Population at risk and prevention.

Acute and chronic heart failure. Cardiogenic shock. Mechanical circulatory support and cardiac transplantation
Pulmonary Hypertension
Thromboembolic venous disease. Population at risk and prevention
Arrhythmias. Interventional therapies. Syncope, sudden cardiac death and resuscitation

DIDACTIC UNIT: MED/11 - CARDIOVASCULAR APPARATUS INTERNSHIP (1 CFU – 25 hours)
- Patient management during practical non-invasive and invasive procedures
- Performance of echocardiography procedures;
- Performing interventional procedures.
- Interpretation of laboratory tests, ECG, Echocardiogram, Rx chest;
- Reasoned setting of pharmacological and interventional treatments;
- Cardiovascular counselling modalities.
- Collection of anamnestic data, under stable clinical conditions and in emergencies, with particular reference to the main cardiac and vascular symptoms;
- Understand the meaning of words used by the patient to describe the symptoms, cardiovascular risk factors;
- Describe the clinical manifestations of major cardiological diseases;
- Perform the set-up for the main diagnostic methods performed

DIDACTIC UNIT: MED/10 - RESPIRATORY SYSTEM INTERNSHIP (1 CFU – 25 hours)
- Invasive diagnostic procedures and therapy;
- Performing the alveolar capillary CO diffusion test and the 6' Walking Test.
- Acquire knowledge regarding respiratory function tests and interpretation of spirometric data for the identification of different types of ventilatory defect;
- Acquire knowledge regarding the interpretation of arterial haemogasanalysis in relation to the clinical picture;
- Correlation of the results obtained with the clinic.
- History taking in patients with respiratory diseases;
- Physiopathological and clinical interpretation of symptoms;
- Describe the clinical manifestations of major diseases;
- Interpret the results of the most common radiological imaging, laboratory and laboratory and respiratory function tests

DIDACTIC UNIT: MED/21 - THORACIC SURGERY INTERNSHIP (1 CFU – 25 hours)
- Invasive and non-invasive diagnostic examinations.
- Indication and interpretation of instrumental examination reports.
- Gathering anamnestic data and objective examination of a patient with suspected vascular pathology

-Didactic methods

The course will employ face-to-face lectures on various topics, clinical case studies, and instructional slides and videos. Interactive teaching methods are emphasized to engage students, particularly during optional programs organized by individual instructors. Teaching will be conducted through frontal lessons. Students will undergo practical training across various clinical units and laboratories, learning to interpret symptoms and perform physical examinations based on patient histories. Diagnostic procedures include pulmonary function tests and non-invasive and invasive tests for thoracic and cardiovascular diseases. Students also observe and, when possible, participate in thoracic and vascular surgical procedures.

- Modalities of learning verification

Exam registration is conducted through the ESSE3 platform. Eligibility for the exam requires attendance of at least 70% of total lecture hours and 50% of each module, along with complete participation in practical training activities.
The examination format involves an oral assessment in each teaching unit to evaluate students' readiness, knowledge, and ability to articulate concepts using appropriate terminology.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The final grade is determined by the Examination Board, considering assessment from each subject or module in the Integrated Course.
The final grade considers:
Quality of knowledge, skills, and competencies possessed and/or manifested.

a) Accuracy, correctness and congruity of knowledge
b) Accuracy, correctness and congruity of skills
c) Accuracy, correctness and congruity of competencies

Expository mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in connecting content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Synthesis ability.

Grading Scale

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics and interacting with the professor during the interview; excellent synthesis skills.
f)

- Reference texts
To be defined

INTEGRATED COURSE: DISEASES OF THE LOCOMOTOR APPARATUS

(5 CFU – 65 hours)

– Prerequisite:

Prerequisites are having passed the Human Anatomy, Human Physiology and Surgical Methodology examinations.

- Learning objectives:

KNOWLEDGE AND UNDERSTANDING:

The course has the goal to give to the students the accurate knowledges of diagnosis and treatment of both congenital and acquired articular and muscoloskeletal diseases. In particular, it will be analysed the ethiopathogenesis and phisiophatology of the main muscloskeletal diseases, the indications and the interpretation of the laboratory and instrumental diagnostic procedures , the principles of treatment from a pharmacological, physical therapy or surgical point of view.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

The student must know the methodology for the anamnesis, the clinical examination and the meaning of the laboratory and instrumental exams. The student must acquire the ability to interpret symptoms and signs, functional and structural alterations, so as to arrive at a global evaluation of the various pathological states of muscoloskeletal diseases. Finally, he must acquire the knowledge concerning the medical, physiotherapy and surgical treatment of locomotor apparatus diseases to set up an appropriate therapy.

AUTONOMY OF JUDGEMENT:

The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of musculoskeletal diseases.

COMMUNICATION SKILLS:

The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.

ABILITY TO LEARN:

The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:

DIDACTIC UNIT: MED/33 - DISEASES OF THE LOCOMOTOR APPARATUS (3 CFU – 30 hours)

This part is divided in 4 main areas: evolutionary age skeletal diseases. 2) Degenerative articular diseases of the adults. 3) Hand diseases. 4) traumatology

DIDACTIC UNIT: MED/34 - PHYSICAL MEDICINE AND REHABILITATION (1 CFU – 10 hours)

The program includes rehabilitation project, exercise therapy, physical therapy, orthesis and limb prosthesis

DIDACTIC UNIT: MED/33 - DISEASES OF THE LOCOMOTOR APPARATUS INTERNSHIP (1 CFU – 25 hours)

- Surgical wound dressing and stitch removal
- Application of a plaster valance and closed plaster appliance
- Discussion of clinical cases on the ward
- Practice applying sutures on anatomical model
- Practice arthrocentesis or intra-articular infiltration
- Analysing diagnostic X-ray, CT and MRI images

- General approach to the trauma patient
- Collect anamnestic data and compile medical records
- Know how to perform a systematic objective examination of the spine vertebral column
- Know how to perform the objective examination of the upper limb (shoulder, elbow wrist, hand)
- Know how to perform the objective examination of the lower limb (hip, knee tibio tarsus)

-Didactic methods

ORTHOPAEDICS:

- Oral Lessons: 30 hours
- Practical Training: 25 hours

PHYSICAL MEDICINE AND REHABILITATION

- Oral Lessons: 10 hours

The entire course will include both frontal lectures presented through PowerPoint presentations and clinical practice through attendance at clinical wards, day hospitals, and the ER of the orthopedic unit. Frontal lectures may be integrated with innovative teaching methods through the analysis and interpretation of clinical cases (active learning).

- Modalities of learning verification

Written Tests + Final Oral Test: The final grade is expressed out of 30 and is the result of the average of all examination components.
The Board of Examiners will define the final mark considering the assessment of each subject or module in the Integrated Course, including the tutor's evaluation of the clinical skills acquired by the students during their internship.

The final exam will be based on either a written or oral test.

- Written Exam: Composed of multiple-choice questions.
- Oral Exam: with open questions on different topics covered in the programme, which may also be presented as clinical cases.

In both cases, the maximum final grade that can be achieved is 30. The exam will be considered passed if at least a grade of 18/30 is achieved.
The evaluation will consider the following:

a) Comprehension of course topics: Ability to formulate valid diagnostic hypotheses and verify them through appropriate and valuable diagnostic planning.
b) Expression capacity: Use of appropriate scientific language and the ability to synthesize information.

The final grade will consider:
Quality of knowledge, skills, and competencies possessed and/or manifested.

a) Appropriateness, correctness and congruence of knowledge
b) Appropriateness, correctness and congruence of skills
c) Appropriateness, correctness and congruence of competencies

Expository mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in connecting content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.

e) Synthesis ability.

Grading Scale

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics and interacting with the professor during the interview; excellent synthesis skills.

Honors are awarded to candidates who demonstrate being remarkably above average, with any eventual expressional, conceptual, logical, and notional limits being mainly irrelevant.

-Reference texts

To be defined

INTEGRATED COURSE: RHEUMATOLOGY AND MEDICAL GENETICS

(8 CFU – 110 hours)

– Prerequisite:

Human Anatomy, Human Physiology, General Pathology, Laboratory Medicine, Internal Medicine I, Pharmacology

- Learning objectives:

KNOWLEDGE AND UNDERSTANDING:

The student will acquire the knowledge related to the definition and classification of Rheumatic Diseases and their epidemiology. Furthermore, he have to learn about the susceptibility factors, the risk factors, the etiopathogenesis, the prevention strategies and the clinical pictures of the different Rheumatic Diseases. The student must learn the basic knowledge of human and medical genetics, with particular reference to gene, chromosomal and multifactorial diseases applicable to medical genetics.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

the student must know the methodology for the anamnesis, the clinical examination and the meaning of the laboratory and instrumental exams. Finally, he must acquire the knowledge concerning the medical therapy of Rheumatic Diseases. He must also acquire the basics of

genetic counseling and genetic engineering. The student must acquire the basic knowledge required for the genealogy evaluation, the analysis of transmission patterns useful for the diagnosis and the formulation of individual and reproductive risk prognosis. It must also acquire those skills that are indispensable for an appropriate approach to the patient suffering from genetic diseases.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of rheumatology and medical genetics
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new informationand to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:
DIDACTIC UNIT: MED/03 - MEDICAL GENETICS (3 CFU – 30 hours)
1. Basic Genetics: the basis of inheritance of characters
2. Autosomal inheritance
3. X linked inheritance
4. Multifactorial inheritance
5. Chromosomal diseases
6. Single gene diseases
7. Genetic Counseling and Eredo-familial cancer
8. HLA and disease

DIDACTIC UNIT: MED/16 - RHEUMATOLOGY (3 CFU – 30 hours)
- Definition and classification of the Rheumatic Diseases
- Epidemiology of the Rheumatic Diseases
- Etiopathogenesis, susceptibility and risk factors, knowledge on prevention procedures; clinical features; clinical history; laboratory and instrumental tests with related sensibility and specificity; medical therapy and rehabilitation of the following diseases or disease groups :
2) ACUTE AND CHRONIC ARTHRITIS
- RHEUMATOID ARTHRITIS
- SERONEGATIVE SPONDYLOARTHRITIS or ENTHESIOARTHRITIS (Ankylosing Spondylitis, Psoriatic Arthritis, Arthritis associated with chronic inflammatory bowel diseases, chronicized axial Reactive Arthritis [Reiters syndrome])
2) INFECTIOUS ARTHRITIS AND MICROBIAL-INDUCED ARTHRITIS
- SEPTIC ARTHRITIS
- REACTIVE ARTHRITIS
3) CONNECTIVE TISSUE DISEASES or SYSTEMIC RHEUMATIC DISEASES
- SYSTEMIC LUPUS ERYTHEMATOSUS
- SYSTEMIC SCLEROSIS
- POLYMYOSITIS/DERMATOMYOSITIS
- SJOGRENS SYNDROME
- POLYMYALGIA RHEUMATICA
- VASCULITIDES (Giant Cell (Temporal or Hortons) Arteritis; Takayasus Arteritis, Polyarteritis nodosa, Wegener granulomatosis [Granulomatosis with polyangiitis] , Churg-Strauss Syndrome [Eosinophilic granulomatous with polyangiitis], Micropolyangiitis, Schonlein-Henoch Syndrome, Crioglobulinemic Vasculitis, Vasculitis secondary to infections or drug treatment], Behcets Disease.

4) CRISTAL-INDUCED ARTHROPATHY, ARTRHOPATIES INDUCED BY ENDOCRINOLOGICAL OR METABOLIC DISORDERS AND BY DEPOSITION DISEASES
- GOUT
- CHONDROCALCINOSIS (PSEUDO-GOUT)
5) PRIMITIVE AND SECONDARY OSTEOARTHROSIS, GENERALIZED AND OF THE DISTINCT ARTICULAR SITES
6) ENTHESIOPATIES
- DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS
7) BONE DISEASES
- OSTEOPOROSIS
- OSTEOMALACIA
- PAGETS DISEASE OF BONE
8) EXTRA-ARTICULAR RHEUMATIC DISORDERS
- FIBROMYALGIA
- LOCALIZED EXTRA-ARTICULAR RHEUMATIC DISORDERS
9) RHEUMATOLOGICAL MANIFESTATIONS OF NEOPLASTIC DISEASES
10) RHEUMATOLOGICAL SYNDROMES SECONDARY TO PERIPHERAL NEUROPATHIES
- CARPAL TUNNELS SYNDROME
- ALGODISTROPHIC SYNDROME

DIDACTIC UNIT: MED/16 - RHEUMATOLOGY INTERNSHIP (1 CFU – 25 hours)
Discussion of clinical cases and related diagnostic-therapeutic pathways.
- Collect the rheumatology-oriented medical history;
- Carry out a complete physical examination mainly oriented towards the locomotor apparatus and the districts most frequently affected by systemic systemic rheumatological diseases;
- Interpret the meaning of examinations for rheumatological pathology outpatient;
- Evaluate instrumental diagnostic responses

DIDACTIC UNIT: MED/03 - MEDICAL GENETICS INTERNSHIP (1 CFU – 25 hours)
- Discussion of clinical cases and related diagnostic-therapeutic pathways;
- Performing at least one genetic counselling;
- Attending the performance of procedures and methods most frequently used in a genetics laboratory.
- Know the transmission patterns of the main genetic diseases useful for the diagnosis and formulation of prognoses of individual and reproductive risk;
- Acquire the basic knowledge necessary for genealogical evaluation

-Didactic methods

The course will include both frontal lectures, through PowerPoint presentations, and clinical practice in clinical wards, day hospitals, clinics, and endoscopy units. Frontal lectures may be supplemented with innovative teaching methods through the analysis and interpretation of clinical cases (active learning).

- Modalities of learning verification

The oral exam will consist of three open questions on three different topics, which may also be presented as clinical cases. Each answer will be evaluated with a score ranging from 0 to 10, with the maximum final grade being 30. The exam will be considered passed if a grade of at least 18/30 is achieved.

The Board of Examiners will define the final mark considering the assessment of each subject or module in the Integrated Course, including the tutor's evaluation of the clinical skills acquired by the students during their internship.

Evaluation criteria include comprehension of course topics, the ability to formulate valid diagnostic hypotheses and verify them through appropriate diagnostic planning, and knowledge of non-specialist therapies for the examined pathologies. Additionally, expressive ability, use of appropriate scientific language, and synthesis skills will be assessed.

The final grade will consider:

Quality of knowledge, skills, and competencies possessed and/or manifested

a) Appropriateness, correctness and congruence of knowledge
b) Appropriateness, correctness and congruence of skills
c) Appropriateness, correctness and congruence of competencies

Expository mode:

a) Expressive ability.
b) Appropriate use of discipline-specific language.
c) Logical skills and coherence in connecting content.
d) Ability to link different topics, identifying common points while maintaining a coherent overall design; this includes attention to structure, organization, and logical connections in the expository discourse.
e) Synthesis ability.

Grading Scale

a) Sufficient (18-20): The candidate demonstrates minimal knowledge, superficial understanding, many gaps, and modest expressive skills, but sufficient to maintain a coherent dialogue; elementary logical skills and coherence in topic connections; poor synthesis and graphic expression skills; minimal interaction with the examiner.
b) Fair (21-23): The candidate demonstrates fair acquisition of knowledge with little depth and few gaps; more than sufficient expressive skills to maintain a coherent dialogue; acceptable command of scientific language; moderate logical skills and coherence in connecting topics; more than sufficient synthesis skills.
c) Good (24-26): The candidate demonstrates a broad background with moderate depth of knowledge and small gaps; satisfactory expressive skills and significant mastery of scientific language; noticeable dialogue skills and critical thinking; good synthesis ability.
d) Very good (27-29): The candidate demonstrates an extensive, well-developed body of knowledge with marginal gaps; remarkable expressive ability and high command of scientific language; excellent dialogue skills, good competence, and aptitude for logical synthesis; high synthesis skills.
e) Excellent (30/30): The candidate demonstrates an extensive and in-depth body of knowledge with irrelevant gaps; high expressive skills and command of scientific language; excellent dialogue skills; marked aptitude for making connections between different topics and interacting with the professor during the interview; excellent synthesis skills.

f) Honors are awarded to candidates who demonstrate being remarkably above average, with any eventual expressional, conceptual, logical, and notional limits being mainly irrelevant.

-Reference texts
To be defined

ELECTIVE INTERNSHIP 1

(4 CFU – 100 hours)

– Prerequisite:
In order to attend any training course in a hospital/Health Care environment, students need to obtain a Certificate of Suitability from a medical doctor and complete the compulsory 'Introductory training in risk assessment and management' course (1 CFU credits)

- Learning objectives:
Knowledge and Understanding:
Students must demonstrate a good knowledge of basic medical sciences and core clinical specialities.
They must be able to understand and explain the principles of the main pathologies, pathophysiological processes and diagnostics.
Ability to apply knowledge and understanding:
Students must be able to apply the acquired knowledge to basic clinical practice, by performing physical examinations, collecting medical histories and recognising key clinical signs.
They must demonstrate the ability to perform basic diagnostic and medical procedures under supervision, such as taking blood samples, administering medication and dressing.
They must be able to take an active role in the management of simple clinical cases, collaborate with the healthcare team and follow supervisors' instructions.
Making Judgments:
Students must develop the ability to formulate hypotheses based on the information gathered and on the critical evaluation of clinical examinations and diagnostic test results.
They must be able to make appropriate decisions in simple clinical situations, recognising their limitations and seeking supervision and advice when necessary.
They must demonstrate awareness of ethical principles in medical practice and apply them in everyday clinical decisions.
Communication Skills:
Students must possess good communication skills, which are essential to interact effectively with patients, family members and the healthcare team.
They must be able to explore patients' medical history in an accurate respectful manner, explain medical procedures and provide clear and understandable information to patients.
They must demonstrate empathy, active listening and the ability to communicate effectively both verbally and in writing, and record clinical information correctly.
Learning Skills:
Students must demonstrate the ability to learn independently, using available resources to advance their knowledge and skills.
They must be able to reflect on their clinical experiences, identifying areas for improvement and adopting strategies for their own professional development.

They must take an active role in the training activities and learning opportunities offered during the placement, showing interest and motivation.

-Contents
Interpreting the results of the most common medical tests;
- Interpreting the essential elements of an ECG;
- Requesting further medical examinations;
- Seeking specialist advice. Knowing how to do it independently:
- Identifying key symptoms and signs;
- Taking a patient's vital signs;
- Performing general and specific physical examination;
- Compiling medical records;
- Taking part in the clinical case discussion;
- Performing basic diagnostic and medical procedures

-Didactic methods
Taking part in the daily activities of a hospital or an outpatient department, a laboratory, an outpatient clinic within the Cagliari AOU or any Italian or foreign health facilities that have an agreement with the University of Cagliari (if part of an internationalisation project)

-Modalities of learning verification:
Certification and evaluation of attendance is carried out by the appointed tutor who

- issues a formal certificate of attendance;
- gives an opinion on the progress of the traineeship;
- evaluates the skills demonstrated

-Reference texts:
To be defined

5 YEAR 1 SEMESTER

INTEGRATED COURSE: GASTROENTEROLOGY AND DISEASES OF THE ENDOCRINE SYSTEM AND METABOLISM

(8 CFU – 110 hours)

– Prerequisite:
Anatomy and pathophysiology of gastrointestinal and endocrinologic systems, anatomic pathology of gastrointestinal and endocrinologic systems, immunology.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student is required to know the epidemiology, risk factors and principal clinical manifestations of gastrointestinal, endocrinologic and metabolic diseases. Additionally, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student must be able to apply both diagnostic and therapeutic strategies of gastrointestinal, endocrinologic and metabolic diseases. In addition, he is required to critically analyze and evaluate alternative hypothesis and differential diagnosis. The student must therefore be able to rationally and efficiently choose among the available diagnostic tools in order to reach a final and correct diagnosis and to subsequently choose the right therapy.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of gastrointestinal, endocrinologic and metabolic diseases.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:
DIDACTIC UNIT: MED/13 - ENDOCRINOLOGY (3 CFU – 30 hours)
Physiopathology, clinical manifestations and therapeutic general principles of the following conditions:
• Endocrinologic regulatory and feed-back mechanisms.
• Diseases of the adenohypophysis and neurohypophysis.
• Hyperthyroidism, Hypothyroidism and autoimmune thyroiditis.
• Nodular benign and malignant diseases of the thyroid.
• Phosphate-calcium metabolism and diseases of the parathyroid glands.
• Adrenal glands dysfunction and enzyme deficiencies.
• Adrenal cortical and medullary diseases.
• Autoimmune Polyendocrine Syndromes (APS).
• Male and female gonadic diseases.
• Endocrinologic tumors.
• Endocrinologic aspects of obesity and leanness.
• Diabetes mellitus and its complications. Diabetic foot.
• Functional hypoglycemia.
• Dyslipidemias.
• Obesity and Metabolic Syndrome.
• Dietetic aspects of endocrinologic and metabolic diseases.
• Laboratory diagnostic algorithms in endocrinologic and metabolic diseases.

DIDACTIC UNIT: MED/12 - GASTROENTEROLOGY (3 CFU – 30 hours)
• Esophageal, gastric and duodenal diseases:
Pathophysiology of the esophagus and related symptoms; esophageal motor disorders; gastroesophageal reflux disease (GERD); non-GERD associated esophagitis; esophageal tumors and precancerous lesions; gastric pathophysiology, H. Pylori infection and related diseases; drug-induced gastric diseases and chronic gastritis, precancerous lesions and gastric tumors.
• Small intestine and Large intestine diseases:
Intestinal pathophysiology; irritable bowel syndrome (IBS); stypsis; diarrhea; celiac disease; food allergies and intolerances; diverticular disease; anorectal pathology; colorectal cancers; Crohn's disease, ulcerative colitis, other inflammatory colitis.
• Liver diseases:

Liver function; acute and chronic liver damage; natural course of liver disease; diagnostic tools; viral hepatitis; alcoholic liver disease, liver steatosis and non-alcoholic steatohepatitis (NASH), autoimmune liver diseases; Wilson's disease, hemochromatosis; drug-induced liver disease; toxic hepatitis; liver cirrhosis and its complications; hepatocellular and vascular tumors, liver transplant.

• Diseases of the biliary tract and of the pancreas:

Physiopathology of biliary secretion; jaundice and cholestasis; chronic cholestatic diseases; gallstones disease, biliary tract tumors; physiopathology of pancreatic secretion; acute and chronic pancreatitis; diseases of the papilla; precancerous lesions and pancreatic tumors; gastrointestinal neuroendocrine tumors.

• Gastroenterology emergencies:

Gastrointestinal bleeding; acute liver failure; acute abdomen.

DIDACTIC UNIT: MED/13 - ENDOCRINOLOGY TRAINING (1 CFU – 25 hours)

Performing at least one ultrasound scan of an endocrine organ (thyroid parathyroid, adrenal);

- Performing at least one thyroid needle aspiration.
- Collect the endocrinological history;
- Perform the complete endocrinological physical examination;
- Evaluate the report of basal endocrine examinations and dynamic test responses endocrine tests;
- Interpreting laboratory data relating to the diabetic and dyslipidaemic patient (fasting and postprandial glycaemia, glycosuria, HbA1c, lipid lipid balance);
- Carry out blood glucose readings with a glucose meter and teach the patient;
- Perform the main anthropometric analyses (BMI, AC, body composition).

DIDACTIC UNIT: MED/12 - GASTROENTEROLOGY INTERNSHIP (1 CFU – 25 hours)

- Discussion with the patient on the modalities, preparation and possible risks associated with performing an endoscopic examination;
- Evaluation and discussion of the clinical picture of a patient with suspected neoplasm of the liver, biliary tract or pancreas and/or with intra or extrahepatic cholestasis in the light also of imaging examinations.
- Collect the history oriented towards gastroenterological pathology;
- Perform a complete objective examination of the abdomen;
- Interpret the meaning of clinical and laboratory parameters in the diagnostics of the main digestive diseases (digestive haemorrhages acute and chronic hepatopathies, peptic ulcer, acute and chronic pancreatitis
viral hepatitis);
- Learning the basics regarding the indications, methods of performing and interpretation of digestive endoscopies and ultrasound scans of the upper abdomen;
- Discriminate between possible causes of acute or chronic abdominal pain;
- Correctly assess the presence of ascites;
- Describe the steps involved in performing an oesophagogastroduodenoscopy;
- Describe the steps involved in performing a diagnostic and/or interventional colonoscopy

-Didactic methods

The course involves lectures and PowerPoint presentations as well as clinical practice at clinical wards, day hospitals, clinics and endoscopy units. Teaching may also involve the analysis and interpretation of clinical cases (active learning) as part of the lectures.

-Modalities of learning verification

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
The final assessment is based on either a written test (multiple-choice questions) or an oral exam. The oral exam consists of 3 open questions on 3 course topics that could be also presented as clinical cases. Each answer is awarded a score from 0 to 10.
The maximum final grade attainable is 30 in both cases. In order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate valid diagnostic hypothesis and to verify them by planning the correct set of diagnostic tests. The exam also tests students' knowledge of non-specialist therapies for the pathologies discussed. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed.

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:
a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps. Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Reference texts
To be defined

INTEGRATED COURSE: INTERNAL MEDICINE I AND NEPHROLOGY

(10 CFU – 145 hours)

– Prerequisite:
Anatomy, Physiology, Pathology, Pharmacology, Clinical Methodology

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student will be required to know the epidemiology, risk factors and common clinical presentations of prevalent acute and chronic diseases and of the main nephrology diseases. Moreover, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.
Furthermore, the student will be required to demonstrate knowledge of diagnostic tests and the therapeutical basis of the diseases.
Orientation, knowledge, and understanding of Guidelines from national and international Scientific Societies about prevalent acute and chronic diseases and of the main nephrology diseases.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
The student will acquire the ability to apply both diagnostic and therapeutic strategies in prevalent acute and chronic diseases and nephrology diseases, showing critical judgment in evaluating different diagnostic hypotheses and weighting more appropriate and cost/efficient strategies to achieve the right diagnosis, the proper therapy, and to provide follow-up visits for continuity of care.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of prevalent acute and chronic diseases and of the main nephrology diseases.
Additionally, the student will get familial with the identification of the best setting (other than acute hospital ward) to ensure continuity of care for patients.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
The students will learn to identify and properly manage most common issues in communication diagnoses and treatments to patients and caregivers.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.
A critical aspect will be the ability to move to be a passive recipient of information and knowledge acquired by others to the attitude to contribute to new knowledge by proper organization of clinical data into “scientifically sound data”.

-Contents:
DIDACTIC UNIT: MED/09 - INTERNAL MEDICINE I (4 CFU – 40 hours)
Internal Medicine theoretical lectures
Clinical approach to the patient with:
1.Fever
2.Chest pain
3.Dyspnea
4.Sistemic arterial hypertension
5.Pulmonary hypertension
6.Shock

7.Abdominal pain
8.Hepatomegaly
9.Splenomegaly
10.Lymphadenopathy
11.Vasculitis
12.Anemia
13.Alterations of hemostasis
o Bleeding
o Thrombosis
14.Edema
15.Coma
16. Frailty in older people
17.Comprehensive geriatric assessment
18. Geriatric syndromes
19. Osteoporisis
20.Connective tissue diseases

DIDACTIC UNIT: MED/14 - NEPHROLOGY (3 CFU – 30 hours)
1. Clinical Nephrology
- Approach to the patient with renal disease (clinical history: urine examination, evaluation of kidney failure, renal ultrasound, immunological study)
- Clinical nephrology syndromes (isolated urinary abnormalities, acute nephritic syndrome, nephrotic syndrome, acute kidney failure, rapidly progressive renal failure, chronic renal failure)
- Glomerulopathies: clinical picture, pathogenesis, primary glomerulopathies
- Secondary glomerulopathies (with detailed information on lupus nephritis, amyloidosis, essential mixed cryoglobulinemia type II, and monoclonal gammopathy of renal significance [MGRS])
- Acute and chronic kidney damage
- AKI (Acute Kidney Injury) including the topic 'COVID-19 and AKI'
- CKD (uremic syndrome: epidemiology, pathophysiology, diagnosis and therapy. Secondary factors of renal damage progression and pathophysiology of adaptation to renal damage)
-Tubulointerstitial nephropathies and tubulopathies (Fanconi's syndrome)
- Renal damage of vascular origin (with emphasis on rapidly progressive renal failure; ANCA-related vasculitis, haemolytic uremic syndrome, renal disease and pregnancy)
- Kidney and hypertension
- Kidney and diabetes
- Kidney and myeloma
- Clinical and metabolic aspects of kidney stones
2. Hydro-Electrolyte and Acid-Base Disorders
- Mechanisms of renal excretion and effects of nephron loss on these mechanisms: pathophysiology of loss of renal excretion mechanisms
- Hydro-Electrolyte alterations (hyponatremia, hypokalaemia, hyperkalaemia)
- Acid-base alterations (interpretation of blood gas analysis; metabolic acidosis; lactic acidosis;
nion gap; metabolic alkalosis)
3. Genetically Determined Kidney Diseases and Rare diseases
- Polycystic kidney disease, Alport syndrome, and other hereditary and rare diseases
4. Immunology and clinical features of kidney transplantation
5. Fundamentals of Renal Replacement Therapies: Haemodialysis, peritoneal dialysis, kidney transplantation and overview of pharmacology and medication use in the renal patient

DIDACTIC UNIT: MED/09 - INTERNAL MEDICINE INTERNSHIP (2 CFU – 50 hours)
- Invasive diagnostic procedures and therapy.
- Acquire knowledge regarding the diagnosis and treatment pathway;
- Acquire knowledge regarding the choice of examinations to be prescribed to the patient;
- Consolidate knowledge regarding basic procedures.
- Collect the medical history in a patient with internist pathology;
- Perform general and district physical examination;
- Describe the clinical manifestations of major diseases;
- Interpret the results of the most common instrumental and laboratory examinations

DIDACTIC UNIT: MED/14 - NEPHROLOGY INTERNSHIP (1 CFU – 25 hours)
- Patient treatment during dialysis
- Treatment of the patient during peritoneal dialysis;
- Procedures for diagnosis and treatment of the patient with hydro-electrolyte disorders;
- Procedures for diagnosis and treatment of patients with acid-base balance disorders. acid-base balance.
- Acquire knowledge regarding the diagnosis and treatment pathway;
- Acquire knowledge regarding the choice of examinations to be prescribed to the patient.
- Collect the medical history in a patient admitted to a nephrology inpatient unit;
- Performing an objective examination aimed at recognising the signs and symptoms of in-patient disease;
- Describe the clinical manifestations of major nephrological diseases;
- Perform set-up for the main diagnostic methods performed.

-Didactic methods
The course involves lectures and PowerPoint presentations as well as clinical practice though the attendance of clinical wards, day hospitals, clinics and endoscopy units. Teaching may also involve the analysis and interpretation of clinical cases (active learning) as part of the lectures.

-Modalities of learning verification
The final assessment is based on either a written test (multiple-choice questions) or an oral exam.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The oral exam consists of 3 open questions on 3 course topics that could be also presented as clinical cases. Each answer is awarded a score from 0 to 10.
The maximum final grade attainable is 30 in both cases. In order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate valid diagnostic hypothesis and to verify them by planning the correct set of diagnostic tests. The exam also tests students' knowledge of non-specialist therapies for the pathologies discussed. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps. Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Reference texts
To be defined

INTEGRATED COURSE: PSYCHIATRY, CLINICAL PSYCHOLOGY

(5 CFU – 65 hours)

– Prerequisite:
Attending lectures; to have passed the exam of Pharmacology or to have completed the Course of Pharmacology.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The 101pecialist required to know the epidemiology, risk factors and principal clinical manifestations of mental disorders. Additionally, the 101pecialist required to know the major diagnostic tools and therapeutic approaches for such diseases, the interpretative models of psychosocial disability in clinical psychology and related psychotherapeutic approaches.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

the student must be able to establish a valid relationship with the patient, to perform a clinical interview and to make a mental status examination, to apply both diagnostic and therapeutic strategies of mental disorders, to collaborate with the 102pecialista s regard to a clinical and pharmacological monitoring. In addition, he is required to critically analyze and evaluate alternative hypothesis and differential diagnosis. The student must therefore be able to rationally and efficiently choose among the available diagnostic tools in order to reach a final and correct diagnosis and to subsequently choose the right therapy.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of mental disorders.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:
-DIDACTIC UNIT: MED/25 - PSYCHIATRY (3 CFU – 30 hours)
- Introduction: concepts of mental health, mental disorder and mental illness
- Elements of clinical methodology in psychiatry
- Classification of mental disorders
- Anxiety disorders
- Obsessive-compulsive and related disorders
- Mood disorders
- Schizophrenia spectrum and other psychotic disorders
- Somatic symptom and related disorders
- Feeding and eating disorders
- Trauma- and stressor-related disorders
- Neurocognitive disorders
- Substance-related and addictive disorders
- Personality disorders
- Suicide
- Gender dysphoria
- Psychiatric emergencies
- Overall organization of mental health services in Italy
- Notions about laws and rules concerning mental health

DIDACTIC UNIT: M-PSI/08 - CLINICAL PSYCHOLOGY (1 CFU – 10 hours)
- Introduction to clinical psychology
- The doctor-patient relationship: interview technique, theoretical bases, and practical applications
- Psychoanalysis
- Behaviorism
- The cognitive behavioral model
- "Post-rationalist" Cognitive Therapy
- The systemic relational model
- Interpersonal psychotherapy
- Psychotherapy and evidence-based medicine
- Resilience: construct, biological basis and clinical correlates

DIDACTIC UNIT: MED/25 - PSYCHIATRY INTERNSHIP (1 CFU – 25 hours)
- Learning, under the guidance of the tutor, how to compile the psychiatric medical records.
- Know appropriately the psychopathological terms commonly used in psychiatry;
- Be able to identify the main psychiatric signs and symptoms in the individual patient;
- Understand the design of interventions, particularly as
concerning the combination of different treatments (psychopharmaceuticals psychotherapy, rehabilitation);
- Knowing the most commonly used classes of psychopharmaceuticals (therapeutic
indications therapeutic indications, effects, side effects, contraindications).

-Didactic methods
This is a lecture-based course, including PowerPoint presentations and the analysis and interpretation of clinical cases (active learning).

-Modalities of learning verification
The final assessment is based on either a written test or an oral exam. The two subject areas of the course (psychiatry and clinical psychology) are tested individually and both must be passed in order to successfully complete the course, the final score being the weighted mean of the two grades. If there are decimals in the final score, decimals below 0.5 will be rounded downward while decimals greater than or equal to 0.5 will be rounded upward.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.

The oral exam consists of 3 open questions on 3 course topics that could be also presented as clinical cases. Each answer is awarded a score from 0 to 10.
The maximum final grade attainable is 30 in both cases. In order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate valid diagnostic hypothesis and to verify them by planning the correct set of diagnostic tests. The exam also tests students' knowledge of non-specialist therapies for the pathologies discussed. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed
The final grade will take into account:

a) Demonstrated knowledge, skills and competences:
b) Pertinent, accurate and consistent knowledge, skills and competences
c) Speaking ability:
d) Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps. Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.

c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Reference texts????? Forse presi dalla parte in italiano?
Psychiatry
- Manuale di Psichiatria, a cura di Alessandro Rossi et al., Edra, Milano, 2019
- Manuale Diagnostico e Statistico dei Disturbi Mentali, quinta edizione, Raffaello Cortina Editore, 2014
- Lecture slides

Clinical Psychology
- Lecture slides and notes
- OPTIONAL: Kaplan & Sadock's. Sinossi di psichiatria di B. J. Sadock, V. A. Sadock,P. Ruiz Piccin-Nuova Libraria, 2018

5 YEAR 2 SEMESTER

INTEGRATED COURSE: SURGERY I AND UROLOGY

(10 CFU – 145 hours)

– Prerequisite:
Prerequisites are having passed the Human Anatomy, Human Physiology and Surgical Methodology examinations.

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student should know the epidemiology, risk factors and clinical expression of surgical, urological, malformative, infectious and oncological pathologies and of the metabolism. The student must also demonstrate knowledge of the main tools for the diagnosis and therapeutic bases of these pathologies.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student must acquire the ability to deal with the diagnostic and therapeutic pathway of surgical and urological pathologies, being able to disentangle himself between alternative hypotheses and differential diagnoses. In this field, the student will acquire the ability to rationally and efficiently choose which diagnostic tools to use among those available in order to reach a diagnosis and set an appropriate therapy.
AUTONOMY OF JUDGEMENT:

The student will learn to acquire and integrate anamnestic and instrumental data in order to make a diagnostic judgement in the field of diseases of surgical and urological relevance
OMMUNICATION SKILLS:
The student will learn to present the relevant data of a given clinical case and to appropriately communicate the development and outcome of diagnostic procedures and therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and implement his or her cultural background in a critical manner by consulting and critically interpreting recent scientific literature.

-Contents:
DIDACTIC UNIT: MED/18 - SURGERY I (4 CFU – 40 hours)
Dieresis and tissue synthesis; repair
- Abdominal trauma and polytrauma
- The endocrine-metabolic response to trauma; shock
- Surgical infections
- Wounds, bruises, ulcers, burns and caustics
- Thyroid and parathyroid diseases
- Breast diseases
- Diseases of the oesophagus and diaphragm
- Stomach disorders
- Pathologies of the small intestine and appendix
- Diseases of the colon, rectum and anus
- Abdominal wall hernias
- Peritonitis
- Intestinal occlusions
- Digestive haemorrhages
- Liver and biliary tract diseases
- Diseases of the pancreas
- Splenopathies of surgical relevance
- Diseases of the adrenal gland, multiple endocrine neoplasms
Transplants: generalities; notions of organ transplants

DIDACTIC UNIT: MED/18 - SURGERY INTERNSHIP (2 CFU –50 hours)
During the internship experience the student will acquire practical skills related to the knowledge acquired in the teaching unit Surgery 1

DIDACTIC UNIT: MED/24 - UROLOGY INTERNSHIP (1 CFU – 25 hours)
During the internship experience the student will acquire practical skills related to the knowledge acquired in the teaching unit Urology

DIDACTIC UNIT: MED/24 - UROLOGY (3 CFU – 30 hours)
- Urinary semiotics
- Haematurias
- Malformations of the urinary apparatus
- The main pathologies of the scrotum
- Calculosis of the urinary tract
- Urinary tract infections
- Urogenital tbc
- Traumas of the urogenital system
- Tumours of the renal parenchyma

- Tumours of the urinary excretory tract
- Benign Prostatic Hypertrophy
- Tumours of the prostate parenchyma
- Tumours of the testis
- Male infertility and erection deficit
- The kidney transplant

-Didactic methods

The course is based on lectures and PowerPoint presentations and may also involve the analysis and interpretation of clinical cases (active learning) as part of the lectures. Live streaming or recordings maybe used in special circumstances like epidemics, and online training can also be available with IT support.

-Modalities of learning verification

The course is assessed through a two-part examination, consisting of a written (preliminary) and an oral (final) test.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
The preliminary test is a multiple-choice quiz.
The oral (final) exam will include 2 or 3 open questions on course topics that could be also presented as clinical cases.

The maximum final grade attainable is 30 in both cases. In order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate valid diagnostic hypothesis and to verify them by planning the correct set of diagnostic tests. The exam also tests students' knowledge of non-specialist therapies for the pathologies discussed. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps.
Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)

Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments and interact with examiners.
Honours ('laude')may be awarded to candidates who perform remarkably above the average.

-Reference texts
To be defined

SPECIAL PHARMACOLOGY

(6 CFU – 60 hours)

– Prerequisite:
Basic notions of biochemistry, physiology, general pathology, general pharmacology

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
- to learn the principles of drug action and the various molecular and cellular mechanisms which mediate the therapeutic effects and the adverse drug reactions;
- to understand that the efficacy of drug therapy is evaluated through the analysis of laboratory and clinical data obtained by studying the patient pathological condition;
-to acquire knowledge and understanding of mechanisms of action of drugs acting on cardiovascular, respiratory, gastrointestinal, nervous, endocrine, metabolic systems and cancer.
- to understand the rational bases for the clinical use of drugs, predicting the pharmacological effects both from diagnostic/therapeutic and toxicological point of view.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
The student will acquire methodological and instrumental application skills for a correct approach to drug therapy
AUTONOMY OF JUDGMENT:
The student will learn to critically interpret and compare scientific data and clinical studies on drugs.
COMMUNICATION SKILLS:
The student will learn to communicate information on drug therapy to patients and will acquire skills to discuss the appropriateness of drug therapies.
ABILITY TO LEARN:
Consultation of databases, publications and information sources accredited at national and international level.

-Contents:
BIO/14 - SPECIAL PHARMACOLOGY (6 CFU – 60 hours)
Nonsteroid anti-inflammatory, antipyretic and analgesic drugs. Drugs used in the pharmacotherapy of gout. Histamine receptors and their antagonists. Drugs used to treat

bronchial asthma and chronic obstructive pulmonary disease. Drugs used to treat gastro-duodenal ulcers and gastroesophageal reflux disease. Drugs used to treat motility disorders of the bowel. Drugs used to treat blood hypertension. Osmotic diuretics. Thiazide and thiazide-like diuretics. Loop diuretics. Potassium-sparing diuretics. Drugs used to treat myocardial ischemia. Drugs used to treat congestive heart failure. Anti-arrhythmic drugs. Anticoagulant, fibrinolytic and antiplatelet drugs. Drugs used to treat dyslipidaemia. Insulin and oral hypoglycaemic agents. Metformin and glitazones. Incretins and DPP-4 inhibitors. Alpha-glucosidase and sodium-glucose co-transportes inhibitors. Corticosteroids. Estrogens, progestins. Androgens. Drugs acting on bone turnover. Drugs used in the chemotherapy of neoplastic diseases. Fundamental principles of toxicology. Teratogenicity and poisoning. Principles of clinical pharmacology: drug monitoring and adverse reactions. General principles of pharmacovigilance. Drug interactions. General principles of pharmacoeconomics. General principles of pharmacotherapy.

-Didactic methods

The course is based on lectures, Power Point presentations on clinical cases and training in hospital wards.

-Modalities of learning verification

Students need to register online through the ESSE3 platform for the course exam. Exam dates are published on the Course website.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
All assessments are carried out in person, via a spoken examination. If so required by epidemic control measures, the oral examination may be replaced by different assessment methods authorized by the University.
Students are asked to discuss course topics and demonstrate their reasoning on how to approach patients, plan diagnostic procedures and therapy strategies in particular.

The assessment will explore students' knowledge and skills, their ability to use specialist language, draw connections across concepts and summarizing skills.

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

To be awarded a 'Pass' grade, students need to demonstrate basic knowledge with few gaps, as well as a basic level of speaking ability as defined above.

-Course Material

To be confirmed

INTEGRATED COURSE: INTERNAL MEDICINE II

(11 CFU – 155 HOURS)

ELECTIVE INTERNSHIP 2

(4 CFU – 100 hours)

– Prerequisite:
In order to attend any training course in a hospital/Health Care environment, students need to obtain a Certificate of Suitability from a medical doctor and complete the compulsory 'Introductory training in risk assessment and management' course (1 CFU credits)

- Learning objectives:
Knowledge and Understanding:
Students must demonstrate advanced knowledge of clinical sciences, specialities and subspecialties.
They must be able to understand and explain complex pathological conditions, pathophysiological processes and advanced diagnostic techniques.

Ability to apply knowledge and understanding:
Students must demonstrate the skills needed to perform advanced diagnostic and therapeutic procedures independently or under minimal supervision.
They must be able to manage complex clinical cases, coordinating multidisciplinary treatment and monitoring the patient's progress.
Making Judgments:
Students must develop the ability make autonomous and well-founded clinical decisions, integrating theoretical knowledge, scientific evidence and ethical considerations. They must be able to evaluate clinical and diagnostic data, recognising and solving complex clinical problems. They must demonstrate awareness of ethical principles in medical practice and apply them in everyday clinical decisions.
Communication Skills:
Students must possess good communication skills, which are essential to interact effectively with patients, family members and multi-disciplinary healthcare teams.
They must be able to explain complex medical conditions and treatment in a clear and understandable way to patients and their families. They must also demonstrate empathy, active listening and the ability to work collaboratively.
Learning Skills:
Students must demonstrate the ability to learn independently, using available resources to advance their knowledge and skills.
They must be able to reflect on their clinical experiences, identifying areas for improvement and adopting strategies for their own professional development.
They must take an active role in continuing education, attending conferences and events and contributing to the training of colleagues and students.

-Contents
Invasive diagnostics and therapeutic manoeuvres.
Active management and discussion of clinical cases on the ward;

Active involvement in the administration and logistics of the chosen department;
Data collection and research activities;
Identifying main symptoms and signs;
Taking a patient's vital signs; -
Performing general and localised physical examinations;
Compiling medical records and daily allowance; -
Requesting specialist clinical examinations and advice

-Didactic methods
Taking part in the daily activities of a hospital or an outpatient department, a laboratory, an outpatient clinic within the Cagliari AOU or any Italian or foreign health facilities that have an agreement with the University of Cagliari (if part of an internationalisation project)

-Modalities of learning verification:
Certification and evaluation of attendance is carried out by the appointed tutor who

- issues a formal certificate of attendance;
- gives an opinion on the progress of the traineeship;
- evaluates the skills demonstrated

-Reference texts:
To be defined

GENERAL MEDICAL PRACTICE

(2 CFU – 50 hours)

– Prerequisite:
In order to attend any training course in a hospital/Health Care environment, students need to obtain a Certificate of Suitability from a medical doctor and complete the compulsory 'Introductory training in risk assessment and management' course (1 CFU credits)

- Learning objectives:
Knowledge and Understanding:
Students must demonstrate a sound knowledge of basic medical sciences and clinical disciplines, including epidemiology, prevention and health promotion.
They must be able to understand and explain common medical conditions, pathophysiological processes, key diagnostics and treatments.
Ability to apply knowledge and understanding:
Students must be able to apply their knowledge to basic clinical practice, conducting physical examinations, collecting medical histories and recognising key clinical signs.
They must demonstrate the basic skills for performing diagnostic and treatment procedures, such as taking blood samples, administering drugs, suturing wounds and managing basic medical emergencies.
They must be able to handle common clinical cases, formulate diagnoses and plan appropriate treatments, following clinical guidelines and working under supervision.
Making Judgments:
Students must develop the ability to evaluate clinical and diagnostic information to make informed clinical decisions, recognising their limitations and seeking supervision and advice when necessary.

They must demonstrate awareness of ethical principles in medical practice and apply them in everyday clinical decisions.
Communication Skills:
Students must possess good communication skills, which are essential to interact effectively with patients, family members and the healthcare team.
They must be able to explore patients' medical history in an accurate respectful manner, explain medical conditions and treatment options in a clear and understandable manner..
They must demonstrate empathy, active listening and the ability to work collaboratively.
Learning Skills:
Students must demonstrate the ability to learn independently, using available resources to advance their knowledge and skills.
They must be able to reflect on their clinical experiences, identifying areas for improvement and adopting strategies for their own professional development.
They must take an active role in their continuous education.

-Contents
Planning and making home visits (occasional, planned and integrated).
Diagnosis, prognosis and drug prescription;
Administration and logistics: paperwork required by national and regional Health Services; issuing drug prescriptions and/or referrals for specialist visits, specialist software;
Appropriate prescription principles, AIFA notes and fee exemptions.
Understanding patients' needs through both outpatient visits and telephone consultations;
Approaching patients, doctor-patient relationships and communication; - Collecting information on personal medical history (recent and old), family, work history;
Performing problem-oriented examinations;
Fostering patient compliance;
Promoting health through the adoption of a healthy lifestyle and disease prevention.

-Didactic methods
Training practice in a General Practitioner's surgery

-Modalities of learning verification:
Certification and evaluation of attendance is carried out by the appointed tutor who

- issues a formal certificate of attendance;
- gives an opinion on the progress of the traineeship;
- evaluates the skills demonstrated

-Reference texts:
To be defined

6 YEAR 1 SEMESTER

INTEGRATED COURSE: ANAESTHESIA AND RESUSCITATION

(9 CFU – 150 HOURS)

– Prerequisite:
To undertake the integrated course, the student must know respiratory and cardiovascular pathophysiology, must know the major cardiovascular diseases, and must know basic pharmacology

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student will be expected to know the tools and techniques of primary resuscitation, recognize and deal with the main situations of vital organ impairment (cardiac, respiratory, neurological and metabolic);recognize and deal with the main emergency situations in the different care settings;develop
medical, clinical and organizational skills for the management of the critical patient and in emergency.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student should acquire the skills to deal with and recognize alterations in the cardiocirculatory, respiratory, central nervous system, and metabolic systems that put the subject's life at risk. In these admittedly extensive and multidisciplinary areas, the student will be expected to identify the most rational hypotheses for diagnosis and therapy, quickly choose the most appropriate diagnostic tools, seek medical and surgical advice useful to the individual case, and set up the appropriate therapy.
AUTONOMY OF JUDGEMENT:
the student will learn to acquire and integrate anamnestic and instrumental data, clinical observations, and specialized consultations in order to make a diagnostic judgment in the context of emergency and urgent medical care and undertake initial maneuvers to support vital organs.
COMMUNICATION SKILLS:
the student will learn to expose the relevant data of a given clinical case, communicate appropriately with colleagues, consultants, and family members of the patient, and clearly and prudently expose the development and outcome of urgent diagnostic procedures and therapeutic interventions.
ABILITY TO LEARN:
the student will learn to acquire technical and organizational skills for the management of medical emergencies, acquire and integrate information from specialist colleagues, work in multidisciplinary teams, and implement their cultural background through consultation and critical interpretation of recent scientific literature.

-Contents:
DIDACTIC UNIT: MED/41 - ANAESTHESIA (4 CFU credits – 40 hours)
Anesthesia
- Generalities, techniques, instrumentation, consent, types of anesthesia.
- Preanesthesia: purposes, drugs (parasympatholytics, opioids, sedatives).
- Induction of anesthesia: purposes, drugs (barbiturates, propofol curari opioids)
- Tracheal intubation: materials methods problems and complications
- Maintenance of anesthesia: purposes, drugs (muscle relaxants, halogenated, anesthesia-class opioids)
- Awakening: mechanisms, drugs used, antidotes used, most frequent complications
- Local and loco-regional anesthesia: drugs, mechanism of action, toxicity and complications.
Resuscitation
- Resuscitation: acute and chronic respiratory failure
- resuscitation of the traumatized

- resuscitation of the intoxicated person
- resuscitation of the burn victim
- Arrhythmias and cardiac arrest.

Intensive care
- sepsis - septic shock
- Cardiac, respiratory, neurological monitoring and pharmacology.
- I.R.A. Acute respiratory failure.
- pulmonary embolism.
- Hypertensive emergencies and emergencies.
- the polytrauma patient: trauma scores and their applications; triage
- Hypovolemic, cardiogenic, anaphylactic, and distributive shock
- Tracheotomy in intensive care and urgency
- transfusion indications and complications
- pulmonary embolism
- disseminated intravascular coagulation

Underwater medicine
- drowning - semi-drowning
- Gas embolism, dizziness, barotrauma, hypoxia and nitrogen narcosis
- Hyperbaric chambers. oti indications, compression sickness.

Emergency medicine
- chest pain
- ischemic heart disease
- angina pectoris
- acute myocardial infarction
- chest trauma
- abdominal trauma
- digestive bleeding classification, treatment
- acute abdominal pathologies
- pulmonary embolism
- anticoagulant drugs
- Ischemic and hemorrhagic stroke and complications
- Treatment of pulmonary edema and acute bronchial asthma attack

DIDACTIC UNIT: MED/41 - PAIN MEDICINE (1 CFU credits – 10 hours)

Pain
- Basic pain considerations
- The acute pain
- Major pain syndromes: benign chronic pain and chronic cancer pain
- Headaches
- pathophysiology of acute pain
- pathophysiology of chronic pain
- classification of pain
- Pharmacological treatment of major acute and chronic nociceptive pain syndromes
- Pharmacological treatment of major acute and chronic neuropathic pain syndromes

Palliative care
- Principles

DIDACTIC UNIT: MED/41 - ANAESTHESIA AND RESUSCITATION INTERNSHIP (4 CFU credits – 100 hours)

During the internship experience the student will acquire practical skills related to the knowledge acquired in the teaching unit Anaesthesia and resuscitation

-Didactic methods
The course is based on lectures and PowerPoint presentations, as well as training practice at hospital wards and where medical simulations are carried out for teaching purposes. The analysis and interpretation of clinical cases is also used to actively involve students in the learning process (active learning). In accordance with the 2020-2021 Student Handbook, (page 12): "Teaching will be delivered simultaneously both online and in-person, thus outlining a mixed teaching that can be enjoyed in university classrooms but at the same time also at a distance. At the beginning of the semester, students will opt for face-to-face or distance learning, and their choice will be binding for the entire semester.

-Modalities of learning verification
The course is assessed through either a written (multiple choice) or an oral test.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
The oral exam entails answering 3 open-ended questions on course topics that may be also presented in the form of a clinical case. Each question is evaluated with a score from 0 to 10
The maximum final grade attainable is 30 in both cases. In order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate hypotheses and plan the diagnostics to test them. Non-specialist knowledge of therapies assessed during training will also be evaluated. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps.
Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)

Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

Online registration for the exam sessions is always via the ESSE3 platform and is open only to students with at least 70% attendance record for lectures and 100% for training activities.

-Reference texts
To be defined

INTEGRATED COURSE: GENERAL SURGERY II

(11 CFU – 155 HOURS)

– Prerequisite:
Knowledge of anatomy and pathophysiology as well as pathological anatomy

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student should know the epidemiology, risk factors and clinical expression of the main surgical pathologies. The student must also demonstrate knowledge of the main tools for the diagnosis and therapeutic bases of these pathologies.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student must acquire the ability to interpret symptoms and signs, functional and structural alterations, so as to arrive at a global evaluation of the various pathological states of surgical interest from a preventive, diagnostic, therapeutic and rehabilitative point of view, in a unitary vision of the patient that uses the knowledge acquired in the study of systemic and specialist pathology as well as the ability to deal with the diagnostic and therapeutic pathway of the main surgical pathologies, knowing how to disentangle alternative hypotheses and differential diagnoses. In this field, the student will acquire the ability to rationally and efficiently choose which diagnostic tools to use among those available to reach a diagnosis and set up an appropriate therapy.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to make a diagnostic judgement in the context of the main diseases of surgical interest.
COMMUNICATION SKILLS:
The student will learn to present the relevant data of a given clinical case and to appropriately communicate the development and outcome of diagnostic procedures and therapeutic interventions.
ABILITY TO LEARN:

The student will learn to acquire new information and implement his or her cultural background in a critical manner by consulting and critically interpreting recent scientific literature.

-Contents:

DIDACTIC UNIT: : MED/18 - EMERGENCY SURGERY (1 CFU credits – 10 hours)

1. Wounds
2. Peritonitis
3. Intestinal obstructions
4. Digestive haemorrhages
5. Acute pancreatitis, peptic ulcer complications
6. Abdominal trauma
7. Chest trauma, pneumothorax
8. Emergencies from aneurysm rupture, thrombosis, embolism

DIDACTIC UNIT: MED/18 - GENERAL SURGERY (7 CFU credits – 70 hours)

ESOPHAGUS: Caustic lesions, Functional motor pathology, Achalasia, Diverticula, Reflux disease, Neoplasms.
DIAPHRAGM: Hernias. STOMACH: Benign pathology, Peptic ulcer (surgical indications), Precancerosis,
Neoplasms, Sequelae of surgery. UPPER DIGERENT TRACT: Haemorrhages. LIVER: Surgical Anatomy and
Resective Surgery, Abscesses - Cysts - Hydatidosis, Benign, Malignant Primary and Secondary Neoplasms,
Portal Hypertension, Transplantation. BILIARY WAYS: Cholelithiasis - acute and chronic cholecystitis, Biliary duct stones, Neoplasms. PANCREAS: Acute pancreatitis, Chronic pancreatitis, Exocrine neoplasms. Small bowel:
Benign pathology, Neoplasms. Small bowel, colon and rectum: Polyposis syndromes, Crohn's disease. Colon and rectum:
Ulcerative colitis, Appendicitis, Diverticular disease, Volvulus, Constipation, Incontinence, Benign neoplasms,
Malignant neoplasms, Prolapse. Anus: Neoplasms, Haemorrhoids, anal fissure, Suppurative pathology, Sexually
transmitted disease. Lower gastro intestinal tract: Haemorrhages, Intestinal obstruction. Abdominal wall: Hernias. ABDOMEN: Acute abdomen. THYROID: Indications for surgery. THYROID: Benign
pathology (Indications for surgery), Neoplasms. Parathyroids: Hyper- and hypofunction syndromes.
Breast: Benign pathology, Neoplasms. PANCREAS: Endocrine tumours. Adrenal glands: Neoplasms.
POLYENDOCRINE SYNDROMES. OBESITY: Indications for surgery. Veins: Varices, venous thrombosis and
thromboembolic disease. ARTERIES: Acute and chronic obstructive pathology, Aneurysms. Lung:
Neoplasms. PATHOLOGY OF THE HYDRO-ELECTROLYTE BALANCE. BASIC SURGICAL TECHNIQUES AND
TECHNOLOGIES. SURGICAL-PATIENT RELATIONSHIP (informed consent, responsibilities of the surgeon,
specialist, family doctor, etc.).

1. HERNias: generalities, inguinal hernia, crural hernia, omelical hernia, incisional hernia

2. ESOPHAGUS: diverticula, gastro-oesophageal reflux, achalasia, carcinoma
3. STOMACH: peptic ulcer and complications, stomach cancer
4. DIVERTICULAR DISEASE OF THE COLON
5. Mesenterich ischemia
6. POLYPS AND COLORECTAL CANCER
7. PATHOLOGY OF THE ANUS: fissures, abscesses perianal fistulas, haemorrhoids
8. CANCER OF THE ANUS
9. ACUTE APPENDICITIS
10. INTESTINAL OBSTRUCTION
11. HAEMORRHAGES OF THE DIGESTIVE SYSTEM
12. ACUTE ABDOMEN
13. PERITONITES
14. BILIARY STONES
15. BILIARY NEOPLASMS
16. BENIGNE neoplasms OF THE LIVED: abscesses and pseudo-abscesses, hydatidosis
17. MALIGNANT neoplasms OF THE LIVED: benign tumours, primary and secondary malignant tumours
18. PANCREAS disease: acute pancreatitis, cysts and pseudocysts of the pancreas
19. CARCINOMA OF THE PANCREAS AND PANCREATIC NEOPLASMS
20. SPLEEN PATHOLOGY
21. SOFT TISSUE SARCOMAS
22. ABDOMINAL TRAUMA, CHEST TRAUMA, HEAD TRAUMA
23. THYROID AND PARATIROID PATHOLOGY OF SURGICAL INTEREST: goitre, thyroid carcinoma,hyperparathyroidism
24. SURRENAL disease OF SURGICAL INTEREST: adrenal insufficiency, adrenal hyperfunction, tumours
25. BREAST CANCER
26. CLINICAL CASES AND COMPILATION OF MEDICAL RECORDS
27. ONLINE EDUCATION

DIDACTIC UNIT: MED/18 - GENERAL SURGERY INTERNSHIP (3 CFU credits – 75 hours)
During the internship experience the student will acquire practical skills related to the knowledge acquired in the teaching unit General surgery

-Didactic methods
The course will entail lectures and PowerPoint presentations as well as clinical practice at a clinical ward, day hospital, clinic and operating theatre. Live streaming or recordings maybe used in special circumstances like epidemics, and online training can also be available with IT support.

Mixed mode teaching will make it possible to choose between in-person lectures in university classrooms or remote learning by accessing recordings of the same lectures. Each student is required to choose between in-person and remote learning at the beginning of the semester, and their choice will be binding until the end of the term.

-Modalities of learning verification
The final exam is based on a written (preliminary) and oral (final) test.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
The written (preliminary) exam is a multiple-choice test.

The oral (final) exam entails 2 or 3 open questions on course topics that could be also presented as clinical cases.
The maximum final grade attainable is 30 in both cases. In order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate hypotheses and plan the diagnostics to test them. Non-specialist knowledge of therapies assessed during training will also be evaluated. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps. Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments, use graphics and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Reference texts
To be defined

INTEGRATED COURSE: GYNAECOLOGY AND OBSTETRICS

(7 CFU – 115 HOURS)

– Prerequisite:
Attendance to Integrated Courses of the years preceding the VI

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING
Students will achieve general knowledge related to the organization, the structure and normal functioning of the female reproductive system. The main purpose is to understand the standard healthy patients care and any pathological changes. Knowledge from a preventive to diagnostic and rehabilitative point of view will be required. In particular, the objectives are:
- understanding the state of health and disease.
- recognize the most frequent forms of gynecological pathology.
- achieve knowledge of the pathophysiological, psychological and clinical problems concerning female fertility and sexuality and its dysfunctions from a medical sexual point of view
- understand natural and assisted reproductive techniques from an endocrine-gynecological point of view;
- pregnancy and prenatal morbidity and childbirth.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
Students will have to address any preventive, diagnostic, prognostic and therapeutic issues related to the female reproductive system. Throughout a physiopathological interpretation, they will have to detect clinical and laboratory findings to make a final diagnosis and evaluate the prognosis.
Cost / benefit ratio evaluations in the choice of diagnostic procedure will be required, paying attention to the correct clinical principles of evidence-based medicine.
Changes in the maternal organism during pregnancy will be learned together with the theoretical knowledge of physiological full-term birth and the clinical presentation of obstetric emergencies.
Students will have to know the theoretical basis of contraception and the pathophysiology of menopause, the theoretical tools for the clinical classification of abnormal uterine bleeding, endopelvic masses and pelvic floor pathology.
Moreover, they will have to know the screening programs and the early diagnosis of the main gynecological neoplasms, and how to set up a basic counseling for contraception, infertility and menopause.
AUTONOMY OF JUDGMENT
Students will have to detect from a clinical and socio-cultural point of view all information relating to the state of health and disease of patients. Problem solving skills will be necessarily developed to make appropriate considerations in terms of physiopathology and priority health problems.
COMMUNICATION SKILLS:
Students will learn clear communication skills with colleagues and patients (including their family members). Professionality and sympathy should be both exercised.
ABILITY TO LEARN:
Students will learn the critical-analytical reading of scientific articles and how to carry out bibliographic research and updating. In addition, the management of independent study and of their own lifelong organization will be crucial for their individual growth.

-Contents:
DIDACTIC UNIT: : MED/40 - GYNAECOLOGY AND OBSTETRICS (4 CFU credits – 40 hours)
GYNECOLOGY
1. Anatomy of the female genital system, elements of embryology
2. Biological basis of reproductive function (steroid hormones, pituitary hormones, prolactin,

hypothalamic hormones, oxytocin, inhibin)
3. Ovarian and menstrual cycle
4. Gynecological, clinical and instrumental diagnostics (gynecological physical examination, oncological cytodiagnostics, colposcopy, gynecological ultrasound, radiological examinations in gynecology, hysteroscopy, gynecological laparoscopy)
5. Menstrual changes; anovulation; dysmenorrhea
6. Puberty
7. Menopause
8. Amenorrhea, hirsutism and polycystic ovary syndrome
9. Contraception (hormonal; intrauterine devices; sterilization)
10. Inflammation of the female genital system (vaginitis, pelvic inflammatory disease)
11. Pelvic floor pathology (urinary incontinence, utero-vaginal prolapse)
12. Sexually transmitted diseases
13. Endometriosis
14. Fibroids
15. Diagnosis and infertility treatments. Assisted reproductive techniques
16. Law 19/02/2004, No. 40 "medically assisted reproduction"
17. Cervicocarcinoma screening; HPV, Pap smear, dysplastic lesions
18. Cervical cancer: diagnosis, staging and therapy
19. Metrorrhagia
20. Benign pathology of the endometrium (polyps, hyperplasia)
21. Endometrial cancer and uterine sarcoma
22. Ovarian cysts
23. Ovarian tumors (benign, borderline and malignant)
24. Vulvar dystrophic lesions and vulva carcinoma
25. Trophoblastic neoplasms (hydatiform mola, choriocarcinoma)
26. Main gynecological interventions (myomectomy, hysterectomy, adnexal surgery, laparoscopy)
OBSTETRICS
1. Fertilization and implantation
2. Placental anatomy and physiology
3. Physiological modifications of the main systems in pregnancy
4. Surveillance protocol of physiological pregnancy
5. Ultrasound in pregnancy: principles and fundamental notions in obstetric ultrasound diagnostics
6. Evaluation of fetal well-being: cardiotocography; fetal biophysical profile; Doppler velocimetry
7. Labor and delivery
8. Physiology of the puerperium
9. Evaluation of the newborn (Apgar score, pH on cord blood)
10. Prenatal diagnosis: diagnostic techniques (amniocentesis, CVS, cordocentesis) and screening.
11. Puerperium
12. Maternal diseases in pregnancy
13. Infections in pregnancy: viral infections (cytomegalovirus, rubella, parvovirus, HIV), toxoplasmosis, syphilis
14. Diabetes in pregnancy
15. Hypertension in pregnancy
16. Multiple pregnancy
17. Preterm birth
18. Extrauterine pregnancy

19. Abortion
20. Law 194
21. Placenta previa and placental abruption
22. Amniotic fluid disorders (oligohydramnios, polyhydramnios)
23. Rh alloimmunization, ABO isoimmunization
24. Intrauterine growth retardation
25. Pathologies of delivery: dystocia, fetal-pelvic disproportion, abnormal presentations
26. Secondment disorders (placenta retention, postpartum haemorrhage)
27. Pathology of the puerperium (traumatic, infectious, metrorrhagia, thromboembolic)
28. Obstetric operations
29. Indications for the Caesarean section
30. Obstetric emergencies
31. IVG and Law 194

DIDACTIC UNIT: MED/40 - GYNAECOLOGY AND OBSTETRICS INTERNSHIP (3 CFU credits – 75 hours)
- Invasive diagnostic and therapeutic manoeuvres typical of the Obstetric and Psychological Emergency Room, delivery room and operating theatre.
- Active management and discussion of clinical cases on the ward;
- Participate in any data collection and research activities
- Identify the main symptoms and signs;
- Detect a patient's vital signs;
- Perform a general physical examination;
- Complete the medical record and daily diary;

-Didactic methods
The course is based on lectures and PowerPoint presentations, as well as training practice at hospital wards and outpatient clinics. The analysis and interpretation of clinical cases is also used to actively involve students in the learning process (active learning). In accordance with the 2020-2021 Student Handbook, (page 12): "Teaching will be delivered simultaneously both online and in-person, thus outlining a mixed teaching that can be enjoyed in university classrooms but at the same time also at a distance. At the beginning of the semester, students will opt for face-to-face or distance learning, and their choice will be binding for the entire semester.

-Modalities of learning verification
The final exam is an oral test.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
For the final exam, student are asked open-ended questions on course topics that may also be presented in the form of a clinical case.

The maximum final grade attainable is 30; in order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate hypotheses and plan the diagnostics to test them. Non-specialist knowledge of therapies assessed during training will also be evaluated. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)
Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps. Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments, use graphics and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Reference texts
To be defined

INTEGRATED COURSE: OCCUPATIONAL MEDICINE AND FORENSIC MEDICINE

(9 CFU – 120 HOURS)

– Prerequisite:
Compulsory prerequisite as per regulation

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
Understanding and critical elaboration of the concepts of responsibility, negligent conduct, autonomy, role and competence of the doctor, with particular attention to the legal and juridical context in which he will work

Being able to identify the risks (chemical, physical and associated with the organization of work) for health and safety in the most common work activities. To indicate the main methods and strategies of hygienic-environmental assessment and the exposure limit values and the biological indicators of dose and effect.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
to learn the mechanisms of action of the main occupational risk factors and be able to identify the main occupational pathologies (bronchopneumopathies, cardiovascular diseases , neuropathies, hepatopathies, dermopathies, osteoarthropathies , organ pathologies) on the basis of professional history, clinical and laboratory procedures sense) etc ..
Specifically, the course aims to introduce students to the main elements of health-related laws and regulations
AUTONOMY OF JUDGEMENT:
Knowing how to evaluate the possible contributing role of work activity in the genesis of common diseases.
The course also aims to provide students with adequate and innovative tools for the organization of work and health planning in an operational health unit, in order to identify clinical risk and both strategies and tools to manage and reduce clinical error
COMMUNICATION SKILLS:
the student will learn to expose relevant data on risks, health and safety in the workplace. He will acquire the ability to communicate with colleagues, consultants and workers and explain in a clear and prudent way the development and outcome of diagnostic procedures and therapeutic interventions.
the student will learn to expose relevant data on risks, health and safety in the healthcare environment. He will acquire the ability to communicate with colleagues, consultants and patients and explain in a clear and prudent way the development and outcome of diagnostic procedures and therapeutic interventions.
ABILITY TO LEARN:
the student will learn to acquire the technical and organizational skills of the main preventive procedures to ensure safety in the workplace and the main provisions of the law on occupational medicine.
the student will learn to acquire the technical and organizational skills of the main procedures concerning the criminal and civil codes, on professional liability, conduct and fault, report and reporting of crime, injury, damage and death.

-Contents:
DIDACTIC UNIT: : MED/44 - OCCUPATIONAL MEDICINE (3 CFU credits – 30 hours)
General classification of the risk from physical, chemical and biological agents and main pathologies. Principles of ergonomics Legislation in force in the field of Occupational Medicine, Prevention Toxicology, General concepts, absorption, distribution, biotransformation and mechanism of toxicants. Biological monitoring Industrial hygiene. Environmental monitoring, intervention strategies Exposure limit values.

DIDACTIC UNIT: MED/43 - FORENSIC MEDICINE (4 CFU credits – 40 hours)
Basic information concerning criminal and civil codes, including some of the main procedural aspects. The imputability and the legal and civil capacity; professional responsibility and condemnable conduct under the various aspects of guilt; the main crimes and fines, both commissive and omissive, and malicious, negligent or involuntary conduct. Different legal qualifications assumed by health professionals in different contexts. Report and crime report. Personal injury and temporary and permanent biological damage. Sexual offenses. Accident at work and occupational diseases. TSO and ADO. Voluntary termination of pregnancy and criminal abortion. Thanatodiagnosis and related certification activities, euthanasia, certification and

health documentation with relative conservation obligations. Informed consent and professional secrecy. The Code of Ethics

DIDACTIC UNIT: MED/44 - OCCUPATIONAL MEDICINE INTERNSHIP (1 CFU credits – 25 hours)
- Making at least one suitability judgement.
- Identification of the main risks to which the worker is exposed;
- Request for specialist advice and instrumental examination;
- Classification of occupational injuries and diseases.
- Carry out a correct work history;
- Carry out a complete objective examination focusing on the main target organs and target apparatuses in relation to the worker's occupational exposures;
- Interpret laboratory tests and images of instrumental examinations.

DIDACTIC UNIT: MED/43 - FORENSIC MEDICINE INTERNSHIP (1 CFU credits – 25 hours)
- Overview and general description of firearm, blunt weapon, thermal and electrocution injuries, poisoning, major trauma.
- Application of the main medico-legal aspects of medical practice;
- Procedural procedure in case of filling out: report, complaint, TSO and ASO, voluntary termination of pregnancy, ascertainment and certification of death, informed consent, certificates for accident and occupational illness occupational disease, application for civil invalidity and disability pension.

-Didactic methods
The course is based on interactive classes, lectures and workshops. To facilitate participation and improve understanding, students are encouraged to use digital classroom equipment and work in small groups.

-Modalities of learning verification
The final exam is an oral test.
The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
The maximum final grade attainable is 30; in order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate
-students' understanding of the topics and processes covered in the course
- their familiarity with the technical language
- their ability to make connections across different topics
- their speaking skills

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

a) Pass (18/30 to 20/30)

Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
b) Satisfactory (21/30 to 23/23)
Reasonable knowledge, with some in-depth analysis but also some knowledge gaps. Acceptable level of scientific language fluency and moderate ability find connections between different topics. Basic interactions with examiners.
c) Good (24/30 to 26/30)
Wide ranging knowledge with few gaps; good speaking ability with good scientific language fluency; ability to sum up key arguments and interact with examiners.
d) Very good (27/30 to 29/30)
Extensive and solid knowledge, with only negligible gaps; notable speaking ability and scientific language fluency; remarkable ability to argue points and interact with examiners.
e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments, use graphics and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Course Material
To be confirmed

INTEGRATED COURSE: GENERAL PAEDIATRICS AND PAEDIATRIC SPECIALTIES

(9 CFU – 150 HOURS)

– Prerequisite:
All those required by the rules of the Council of Course of Degree

- Learning objectives:
KNOWLEDGE AND UNDERSTANDING:
The student is required to know the epidemiology, risk factors and principal clinical manifestations of pediatric diseases. Additionally, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
the student must be able to apply both diagnostic and therapeutic strategies of pediatric diseases. In addition, he is required to critically analyze and evaluate alternative hypothesis and differential diagnosis. The student must therefore be able to rationally and efficiently choose among the available diagnostic tools in order to reach a final and correct diagnosis and to subsequently choose the right therapy.
AUTONOMY OF JUDGEMENT:
The student will learn to acquire and integrate anamnestic and instrumental data in order to formulate a diagnostic judgement in the context of pediatric diseases.
COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.

ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:
KNOWLEDGE AND UNDERSTANDING:
The student is required to know the epidemiology, risk factors and principal clinical manifestations of pediatric diseases. Additionally, the student is required to know the major diagnostic tools and therapeutic approaches for such diseases.
ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:
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COMMUNICATION SKILLS:
The student will learn to present relevant data regarding a specific clinical case and to properly expose the development of diagnostic pathways and the results of therapeutic interventions.
ABILITY TO LEARN:
The student will learn to acquire new information and to enforce his cultural background in a critical way through the consultation and interpretation of recent scientific literature.

-Contents:
DIDACTIC UNIT: MED/39 - CHILD NEUROPSYCHIATRY (1 CFU – 10 hours)
The neurological, cognitive, affective and social development of the Child and Adolescent. Systems of classification and methods for diagnoses. Neurodevelopmental disorders: dist. autism spectrum, ADHD, intellectual disability, dist. of language and specific learning, dist. motor coordination. Impulse discontrol disorders (oppositional-provocative d., Conduct disorder); emergencies in developmental psychiatry. Psycho-educational interventions and drug therapies in developmental psychiatry. Neurological diseases in developmental age: epilepsies, infantile cerebral palsy, extrapyramidal pathology, SMA, West Syndrome, myopathy cough - TB - Diseases of the oral cavity.
Syndromes: Down - Prader - Willi - Williams. - By George - Hyperlaxity Syndromes (Marfan - Ehelrs-Danlos.)
Achondroplasia
Autoimmune encephalitis
Hereditary Metabolic Diseases

DIDACTIC UNIT: MED/38 - GENERAL PAEDIATRICS AND PAEDIATRIC SPECIALTIES (4 CFU – 40 hours)
Diseases of the respiratory system: adenoid hypertrophy, pharyngitis, epiglottis, spastic laryngitis, bronchiolitis, asthma, pneumonia, cystic fibrosis, broncho-pulmonary dysplasia.
Diseases of the digestive system: gastroesophageal reflux, gastroenteritis, intestinal malabsorption syndrome, chronic intestinal inflammatory diseases, habitual vomiting of the infant.
Urinary tract infections.
Endocrine diseases: obesity, hyperhypo-thyroidism, short stature, puberty and adolescence, diabetes.

Infectious diseases: measles, chicken pox, rubella, V disease, VI disease, scarlet fever, TB, whooping cough, infectious mononucleosis, encephalitis, meningitis, Kawasaki disease. Hepatitis.
Diseases of impaired immune response: immunodeficiencies
primary and secondary, rheumatic diseases (juvenile idiopathic arthritis), autoimmune hepatitis, hypertransaminasemias, Schoenlein-Henoch purpura.
Newborn: low weight, preterm and postterm newborn, neonatal jaundice, distant outcomes of perinatal pathology, asphyxia, neonatal screening.
Feeding in the first year of age; dystrophies.
Food allergy and food intolerances.
Vaccinations.
Blood: deficiency anemias, a. haemolytics, thalassemias, thrombocytopenia, leukemias, lymphomas.

DIDACTIC UNIT: MED/38 - INTERNSHIP (4 CFU – 100 hours)
- Detect the stage of nutrition and dehydration in a child;
- Communicating the benefits and risks of the main vaccination measures in childhood;
- Gathering medical history with parents and children during hospitalisation (ordinary and/or DH) of children and adolescents with neuropsychiatric disorders;
- Observation of clinical, neurological and psychiatric assessments;
- Observation of clinical interviews and play sessions;
- Management of the infant at risk.
- Completion of a discharge file and clinical report;
- Request for specialist counselling and instrumental examination;
- Detection and graphical processing of the most important auxological parameters;
- Participation in the administration and correction of tests and instrumental examinations;
- Participation in team meetings and supervision.
- Carry out correct anamnesis in paediatrics;
- Carry out correct objective examination in paediatrics;
- Learning to assess changes and different problems from the early years of life up to the adolescent period;
- Interpreting instrumental and laboratory examinations that have values of normality values that differ from adults and vary according to the patient's age;
- To process clinical and laboratory data in order to formulate a diagnostic hypothesis diagnostic hypothesis;
- To know the therapeutic issues in childhood regarding the choice of drugs and their dosage that varies according to the parameters growth parameters (weight, body surface area).

-Didactic methods
The course is based on lectures and PowerPoint presentations, as well as training practice at hospital wards and outpatient clinics. The analysis and interpretation of clinical cases is also used to actively involve students in the learning process (active learning). In accordance with the 2020-2021 Student Handbook, (page 12): "Teaching will be delivered simultaneously both online and in-person, thus outlining a mixed teaching that can be enjoyed in university classrooms but at the same time also at a distance. At the beginning of the semester, students will opt for face-to-face or distance learning, and their choice will be binding for the entire semester.

-Modalities of learning verification
The final exam is an oral test.

The Board of examiners will define the final mark considering the assessments of each subject or module of the Integrated Course, including the tutor evaluation of the clinical skills acquired by the students during their internship.
The maximum final grade attainable is 30; in order to pass the exam, students need to score at least 18/30.
The assessment seeks to evaluate students' understanding of the topics covered in the course, as well as their ability to formulate hypotheses and plan the diagnostics to test them. Non-specialist knowledge of therapies assessed during training will also be evaluated. Finally, students' ability to use appropriate scientific language and their summarizing skills will also be assessed

The final grade will take into account:

- Demonstrated knowledge, skills and competences:
    - Pertinent, accurate and consistent knowledge, skills and competences
- Speaking ability:
    - Students' ability to express themselves, using specific discipline-related language appropriately, highlighting key learning points, demonstrating reasoning and making connections between different subject areas.

The grading scale is as follows:

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Few acquired notions, a superficial level of knowledge with numerous gaps, and simple yet coherent oral arguments. Basic demonstrated logic and ability to link topics, low interactions with examiners.
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e) Excellent (30/30)
Extensive and exceptional knowledge. Remarkable speaking ability with scientific language fluency, excellent ability to establish links between different topics, outstanding ability to sum up arguments, use graphics and interact with examiners.
Honours ('laude') may be awarded to candidates who perform remarkably above the average.

-Reference texts
To be defined

PRACTICAL TRAINING FOR THE STATE EXAM (TPV) - GENERAL SURGERY

(5 CFU credits – 125 hours)

– Prerequisite:
Practical training (TPV) can be accessed from the sixth year, if all the statutory courses of the first four years have been successfully completed

- Learning objectives:
Knowledge and Understanding:
Students must demonstrate a sound knowledge of all Anatomy, Physiology and Pathology issues relevant to general surgery, including the principles of pre-op, intra-op and post-op management of surgical patients.
They must be able to provide guidance and explain the contraindications, risks and benefits of key surgical procedures.
Ability to apply knowledge and understanding:
Students must be able to apply their knowledge to clinical surgical practice, taking an active role in the evaluation and management of surgical patients.
They must demonstrate the skills needed to perform basic surgical procedures under supervision, such as suturing wounds, draining abscesses, placing drains and other minor surgical techniques.
They must be able to assist in the operating theatre, understanding and familiarizing with asepsis techniques, surgical instruments and the main phases of surgical operations.
Making Judgments:
Students must develop the ability to make informed clinical decisions in surgical situations by critically evaluating clinical information and diagnostic data.
They must be able to make pre-operative diagnoses, plan surgical interventions and manage intra- and post-operative complications.
They must demonstrate awareness of ethical principles in surgical practice and apply them in everyday clinical decisions.
Communication Skills:
Students must possess excellent communication skills, which are essential to interact effectively with patients, family members and multidisciplinary surgical teams.
They must be able to explain medical conditions, treatment options and surgical procedures to patients and their families in a clear and understandable manner.
Must demonstrate empathy, active listening and the ability to work in a team, facilitating collaboration and coordination of surgical treatment.
Learning Skills:
Students must demonstrate the ability to learn independently, using available resources to keep their knowledge and surgical skills up to date.
They must be able to critically reflect on their clinical and surgical experiences, identifying areas for improvement and adopting strategies for their own professional development.
They must actively participate in the training activities, surgical simulation sessions and learning opportunities offered during their internship, showing interest and motivation for their continuing education.

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- patient approach and hygiene standards
- anamnesis and examination
- communication skills
- interpersonal skills and the doctor-patient relationship
- clinical skills
- personal work profile

-Didactic Methods
Training practice at surgery departments

-Modalities of learning verification:
The assessment is carried out by the INTERNAL MEDICINE and GENERAL SURGERY lecturer who has taken the role of Coordinating Tutor, once the TPV has been completed, and taking into account the other tutors' interim assessment. In the GENERAL MEDICINE area, the Coordinating tutor chosen among the Medicine and Surgery lecturers will perform the assessment, also at the end of the TPV and taking into account the interim assessments.
The Coordinating Tutor will provide minutes of the training activities for successful students, while unsuccessful trainees will be required to re-take their training and have a new assessment in the area in which he/she failed.

-Reference texts:
To be defined

PRACTICAL TRAINING FOR THE STATE EXAM (TPV) - GENERAL MEDICINE

(5 CFU credits – 125 hours)

– Prerequisite:
The practical training (TPV) can be accessed from the sixth year, provided that all the statutory courses of the first four years have been successfully completed;

- Learning objectives:
Knowledge and Understanding:
Students must demonstrate a sound knowledge of basic medical sciences and clinical issues relevant to Internal Medicine, including internal pathologies, pathophysiological mechanisms, clinical signs, diagnostic methodologies and treatments.
They must be able to provide guidance and explain the contraindications, risks and benefits of key Internal Medicine diagnoses and therapies.
Ability to apply knowledge and understanding:
Students must be able to apply their knowledge to Internal Medicine practice, making assessments and accurate diagnoses and planning appropriate treatments.
Students must develop the ability to conduct thorough physical examinations, interpreting the results of laboratory tests and imaging, and managing both pharmacological and non-pharmacological therapies.
They must be able to manage complex clinical cases, coordinating multidisciplinary treatment and monitoring patient's clinical evolution.
Making Judgments:
Students must develop the ability to make solid clinical decisions independently, integrating their knowledge with scientific evidence and ethical considerations.
They must be able to evaluate clinical and diagnostic data, recognising and solving complex clinical problems and managing situations of clinical uncertainty.
They must demonstrate awareness of ethical principles in medical practice and apply them in everyday clinical decisions.

Communication Skills:
Students must possess excellent communication skills, which are essential to interact effectively with patients, family members and multidisciplinary medical teams.
They must be able to explain complex medical conditions, treatment options and prognoses to patients and their families in a clear and understandable manner.
Students must demonstrate empathy, active listening and the ability to work in a team, facilitating collaboration during treatment
They must be able to explain medical conditions, treatment options and surgical procedures to patients and their families in a clear and understandable manner.
Must demonstrate empathy, active listening and the ability to work in a team, facilitating collaboration and coordination of surgical treatment.
Learning Skills:
Students must demonstrate the ability to learn independently, using available resources to keep their knowledge and Internal Medicine skills up to date.
They must be able to assess their clinical experience, identifying areas for improvement and adopting strategies for their own professional development.
They must actively participate in courses, conferences and educational activities, also contributing to the training of colleagues and students

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patient approach and hygiene standards
anamnesis and objective examination
communication skills
interpersonal skills and the doctor-patient relationship
clinical skills
professional profile and knowledge of the organisation of the National and Regional Health Service and the main bureaucratic and prescriptive regulations
prevention, health promotion and healthy lifestyles actions
-Didactic Methods
practical activity in Internal Medicine departments

-Modalities of learning verification:
The assessment is carried out by the INTERNAL MEDICINE and GENERAL SURGERY lecturer who has taken the role of Coordinating Tutor, once the TPV has been completed, and taking into account the other tutors' interim assessment. In the GENERAL MEDICINE area, the Coordinating tutor chosen among the Medicine and Surgery lecturers will perform the assessment, also at the end of the TPV and taking into account the interim assessments.
The Coordinating Tutor will provide minutes of the training activities for successful students, while unsuccessful trainees will be required to re-take their training and have a new assessment in the area in which he/she failed.

-Reference texts:
To be defined

PRACTICAL TRAINING FOR THE STATE EXAM (TPV) - GENERAL PRACTICE

(5 CFU credits – 125 hours)

– Prerequisite:
The practical training (TPV) can be accessed from the sixth year, provided that all the statutory courses of the first four years have been successfully completed;

- Learning objectives:
Knowledge and Understanding:
Students must demonstrate a sound knowledge of basic medical sciences and clinical issues relevant to Internal Medicine, including internal pathologies, pathophysiological mechanisms, clinical signs, diagnostic methodologies and treatments.
They must be able to provide guidance and explain the contraindications, risks and benefits of key Internal Medicine diagnoses and therapies.
Ability to apply knowledge and understanding:
Students must be able to apply their knowledge to Internal Medicine practice, making assessments and accurate diagnoses and planning appropriate treatments.
Students must develop the ability to conduct thorough physical examinations, interpreting the results of laboratory tests and imaging, and managing both pharmacological and non-pharmacological therapies.
They must be able to manage complex clinical cases, coordinating multidisciplinary treatment and monitoring patient's clinical evolution.
Making Judgments:
Students must develop the ability to make solid clinical decisions independently, integrating their knowledge with scientific evidence and ethical considerations.
They must be able to evaluate clinical and diagnostic data, recognising and solving complex clinical problems and managing situations of clinical uncertainty.
They must demonstrate awareness of ethical principles in medical practice and apply them in everyday clinical decisions.
Communication Skills:
Students must possess excellent communication skills, which are essential to interact effectively with patients, family members and multidisciplinary medical teams.
They must be able to explain complex medical conditions, treatment options and prognoses to patients and their families in a clear and understandable manner.
Students must demonstrate empathy, active listening and the ability to work in a team, facilitating collaboration during treatment
They must be able to explain medical conditions, treatment options and surgical procedures to patients and their families in a clear and understandable manner.
Must demonstrate empathy, active listening and the ability to work in a team, facilitating collaboration and coordination of surgical treatment.
Learning Skills:
Students must demonstrate the ability to learn independently, using available resources to keep their knowledge and Internal Medicine skills up to date.
They must be able to assess their clinical experience, identifying areas for improvement and adopting strategies for their own professional development.
They must actively participate in courses, conferences and educational activities, also contributing to the training of colleagues and students

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patient approach and hygiene standards
anamnesis and examination
communication skills

interpersonal skills and the doctor-patient relationship
clinical skills
personal work profile

-Didactic Methods

Practical work in a GP surgery

-Modalities of learning verification:

The assessment is carried out by the INTERNAL MEDICINE and GENERAL SURGERY lecturer who has taken the role of Coordinating Tutor, once the TPV has been completed, and taking into account the other tutors' interim assessment. In the GENERAL MEDICINE area, the Coordinating Tutor chosen among the Medicine and Surgery lecturers will perform the assessment, also at the end of the TPV and taking into account the interim assessments.
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-Reference texts:

To be defined