

**5th – 6th year
AA.YY. 2026-2027**

**SBRACCIA P.
COORDINATOR**

Scientific Field	INTERNAL MEDICINE AND MEDICAL GENETICS	TUTOR	ECTS
MED/09	INTERNAL MEDICINE 1	Sbraccia Paolo	1
MED/09	INTERNAL MEDICINE 1	Federici Massimo	1
MED/09	INTERNAL MEDICINE 1	Di Cola Giovanni	1
MED/09	INTERNAL MEDICINE 1	Guglielmi Valeria	1
MED/03	MEDICAL GENETICS	Biancolella Michela	1
MED/03	MEDICAL GENETICS	Giardina Emiliano	1
MED/03	MEDICAL GENETICS	Borgiani Paola	1
MED/09	INTERNAL MEDICINE 2	Sbraccia Paolo	2
MED/09	INTERNAL MEDICINE 2	D'Adamo Monica	1
MED/50	APPLIED MEDICAL AND TECHNICAL SCIENCES	Della Morte David	1
MED/50	APPLIED MEDICAL AND TECHNICAL SCIENCES	Guglielmi Valeria	1
MED/06	MEDICAL ONCOLOGY	Roselli Mario	2
MED/06	MEDICAL ONCOLOGY "TARGET THERAPY"	Torino Francesco	1
		TOT	15

SPECIFIC AIMS

EN: Aim of the Internal Medicine Course is to challenge the students on case-based clinical reasoning, and to reinforce the knowledge and application of Clinical Method.

Major Internistic presentations is addressed; emphasis will be placed on the practical application of physiopathologic basis of clinical signs and symptoms, on differential diagnostic reasoning, proceeding from the in-depth analysis to the general synthetic view in order to address the complexity of the clinical scenarios.

A systematic nosographic list displays the core-curriculum of Internal Medicine Course: topics are discussed emphasizing clinical reasoning basis and diagnostic proceedings.

IT: Il Corso di Medicina Interna rappresenta il passaggio dalla fase delle conoscenze semeiologiche, metodologiche, fisiopatologiche e sistematiche, alla fase della formulazione diagnostica e del procedimento decisionale clinico; costituisce quindi il completamento delle modalità di approccio dello studente al malato nella sua complessità clinica.

L'obiettivo formativo potrà ritenersi completo stimolando capacità ed autonomia nell'apprendimento tramite lezioni frontali il più possibile interattive.

PROGRAM

EN: - DISEASES OF CARDIOVASCULAR SYSTEM:

Hypertension, Atherosclerosis, Arrhythmias, Pulmonary Hypertension, Angina Pectoris, Acute Myocardial Infarction, Cardiogenic Shock, Valvular Diseases, Cardiomyopathies, Pericarditis, Aortic Diseases, Peripheral Vascular Diseases, Pulmonary embolism, Heart Failure, Cerebrovascular Ischemic and Hemorrhagic Diseases.

INTERNAL MEDICINE

- DISEASES OF RESPIRATORY SYSTEM:

Asthma, Chronic Obstructive Pulmonary Disease, Interstitial Pneumopathies, Pneumonias, Bronchiectasis, Cystic Fibrosis, Sarcoidosis, Pulmonary Neoplasms, Diseases of the diaphragm, chest wall, the pleura and mediastinum, Diseases of the upper airways, Respiratory failure, Tuberculosis.

- ENDOCRINE AND METABOLIC DISEASES:

Metabolic Syndrome, Diabetes Mellitus, Hypoglycemic Syndromes, Dyslipidemia, Obesity, Thinness, Parathyroid, Hypercalcaemic And Hypocalcaemic Syndromes, Osteoporosis, Pituitary (Adenomas, Acromegaly, Cushing Disease, Hypopituitarism), Diabetes Insipidus and SIADH, Thyroid (Toxic and Non Toxic Nodular Goiter, Grave's Disease, Hypothyroidism, Thyroiditis, Benign And Malignant Tumors), Adrenal Gland (Incidentalomas, Addison Disease, Conn Disease, Pheochromocytoma), Hyperandrogenism, Hypogonadism, Gout And Alterations Purine Metabolism.

- DISEASES OF THE KIDNEYS:

Acid-Base and Electrolytes Disturbances, Primitive Glomerular Diseases, Secondary Glomerular Diseases (Metabolic and Autoimmune), Urinary Tract Infections and Pyelonephritis, Tubulopathies, Vascular Diseases of the Kidney, Kidney Stones (Nephrolithiasis), Acute Renal Insufficiency, Chronic Kidney Disease.

- DISEASES OF THE GASTROINTESTINAL SYSTEM:

Functional Diseases, Inflammatory and Neoplastic Diseases of the Esophagus, Gastroesophageal Reflux, Gastritis, Peptic Ulcer, Zollinger-Ellison Syndrome, Neoplasms of the Stomach, Functional Gastrointestinal Disorders, Diarrhea, Malabsorption, Inflammatory Enteropathy, Intestinal Vascular, Neoplasms of the Large and Small Intestine, Pancreatitis, Pancreatic Cancer, Food Poisoning, Acute Hepatitis, Chronic Hepatitis, Diseases of the Biliary Tract, Liver Cirrhosis and its Major Complications, Acute and

Chronic Liver Failure and Hepatic Encephalopathy.

- DISEASES OF THE BLOOD:

Clinical and Diagnostic Classification of Anemia, Myeloproliferative Diseases, Acute Leukemias, Malignant Lymphomas, Plasma Cell Disorders, Chronic Lymphoproliferative Syndromes, Bone Marrow Transplantation, Hemostasis and Coagulation Disorders.

IT: - MALATTIE DEL SISTEMA CARDIOVASCOLARE:

Iperensione, Aterosclerosi, Aritmie, Iperensione Polmonare, Angina Pectoris, Infarto Miocardico Acuto, Shock Cardiogeno, Malattie Valvolari, Cardiomiopatie, Pericardite, Malattie dell'Aorta, Malattie Vascolari Periferiche, Embolia polmonare, Insufficienza cardiaca, Malattie cerebrovascolari ischemiche ed emorragiche.

-MALATTIE DEL SISTEMA RESPIRATORIO:

Asma, Broncopneumopatia Cronica Ostruttiva, Pneumopatie Interstiziali, Polmoniti, Bronchiectasie, Fibrosi Cistica, Sarcoidosi, Neoplasie Polmonari, Malattie del diaframma, della parete toracica, della pleura e del mediastino, Malattie delle vie aeree superiori, Insufficienza respiratoria, Tubercolosi.

-MALATTIE ENDOCRINE E METABOLICHE:

Sindrome Metabolica, Diabete Mellito, Sindromi Ipoglicemiche, Dislipidemia, Obesità, Magrezza, Paratiroidi, Sindromi Ipercalcemiche e Ipocalcemiche, Osteoporosi, Ipofisi (Adenomi, Acromegalia, Malattia di Cushing, Ipopituitarismo), Diabete Insipido e SIADH, Tiroide (Gozzo Nodulare Tossico e Non Tossico, Malattia di Graves, Ipotiroidismo, Tiroiditi, Tumori Benigni e Maligni), Ghiandola Surrenale (Incidentalomi, Morbo di Addison, Morbo di Conn, Feocromocitoma), Iperandrogenismo, Ipogonadismo, Gotta e Alterazioni del Metabolismo delle Purine.

-MALATTIE DEI RENI:

Disturbi dell'Equilibrio Acido-Base ed Elettrolitico, Malattie Glomerulari Primitive, Malattie Glomerulari Secondarie (Metaboliche e Autoimmuni), Infezioni delle Vie Urinarie e Pielonefrite, Tubulopatie, Malattie Vascolari del Rene, Calcoli Renali (Nefrolitiasi), Insufficienza Renale Acuta, Malattia Renale Cronica.

-MALATTIE DEL SISTEMA GASTROINTESTINALE:

Malattie Funzionali, Malattie Infiammatorie e Neoplastiche dell'Esofago, Reflusso Gastroesofageo, Gastrite, Ulcera Peptica, Sindrome di Zollinger-Ellison, Neoplasie dello Stomaco, Disturbi Funzionali Gastrointestinali, Diarrea, Malassorbimento, Enteropatie Infiammatorie, Malattie Vascolari Intestinali, Neoplasie dell'Intestino Crasso e Tenue, Pancreatite, Cancro del Pancreas, Intossicazioni Alimentari, Epatite Acuta, Epatite Cronica, Malattie delle Vie Biliari, Cirrosi Epatica e le sue Principali Complicanze, Insufficienza Epatica Acuta e Cronica ed Encefalopatia Epatica.

-MALATTIE DEL SANGUE:

Classificazione Clinica e Diagnostica delle Anemie, Malattie Mieloproliferative, Leucemie Acute, Linfomi Maligni, Disordini delle Cellule Plasmatiche, Sindromi Linfoproliferative Croniche, Trapianto di Midollo Osseo, Disturbi dell'Emostasi e della Coagulazione.

PROGRAM

EN:- THE GENETIC INTER-INDIVIDUAL VARIABILITY AND THE CONCEPTS OF POLYMORPHISM AND MUTATION. PRINCIPAL TYPES OF GENETIC POLYMORPHISMS. HAPLOTYPES.

- METHODOLOGICAL APPROACHES TO STUDY INTER-INDIVIDUAL GENETIC VARIABILITY AND TO IDENTIFY GENES

MEDICAL GENETICS

INVOLVED IN COMPLEX MULTIFACTORIAL DISEASE SUSCEPTIBILITY AND DRUG RESPONSE (CANDIDATE GENE APPROACH, GENOME WIDE ANALYSIS, NGS).

- THE CONCEPT OF GENOMIC BIOMARKER.

- DIFFERENT TYPES OF GENETIC TESTING AND THEIR CORRECT USE IN CLINICAL PRACTICE. CONCEPT OF ANALYTICAL VALIDITY, CLINICAL VALIDITY AND CLINICAL UTILITY FOR GENOMIC BIOMARKERS.

- EXTENSION AND EXCEPTIONS TO MENDEL'S LAWS.

- GENETIC COUNSELLING, PEDIGREE ANALYSIS, EMPIRIC RISK.

- GENETICS IN MULTIFACTORIAL TRAITS AND COMPLEX DISEASES.

- MEDICAL GENOMICS:

- Cancer genomics and personalized medicine:

- Hereditary cancer syndrome:
 - Hereditary breast cancer and ovarian cancer syndrome (HBOC)
 - Lynch syndrome (Hereditary nonpolyposis colorectal cancer)

- Cancer genetic counseling.

- PHARMACOGENETICS TESTING AND CLINICAL UTILITY: VARIOUS ILLUSTRATIVE EXAMPLES IN DETAILS OF APPLICATION OF PHARMACOGENOMICS IN SAFETY AND EFFICACY OF DRUGS IN DIFFERENT FIELDS:

- Oncology (Pharmacogenetics of: Irinotecan, Tamoxifen, Cetuximab, Herbitux);

- Cardiovascular diseases (Warfarin, Statins);

- Infectious diseases (Hiv: Abacavir and severe adverse reactions; HCV: Peg Interferon efficacy and IL28 polymorphisms.);

- Pharmacogenetics Therapy of pain and anesthesia.

- APPLICATIONS OF PGX IN DRUG DISCOVERY AND CLINICAL TRIALS AND IN PHARMACOVIGILANCE.

- FROM GENOTYPING TO DRUG LABEL-CHALLENGES.

- PHARMACOGENOMICS; THE REGULATORY ENVIRONMENT.

IT: -VARIABILITÀ GENETICA INTER-INDIVIDUALE E I CONCETTI DI POLIMORFISMO E MUTAZIONE. PRINCIPALI TIPI DI POLIMORFISMI GENETICI. ALOTIPI.

-APPROCCI METODOLOGICI PER STUDIARE LA VARIABILITÀ GENETICA INTER-INDIVIDUALE E PER IDENTIFICARE I GENI COINVOLTI NELLA SUSCETTIBILITÀ A MALATTIE COMPLESSE MULTIFATTORIALI E NELLA RISPOSTA AI FARMACI (APPROCCIO DEL GENE CANDIDATO, ANALISI SU TUTTO IL GENOMA, NGS).

-IL CONCETTO DI BIOMARCATORE GENOMICO.

-DIVERSI TIPI DI TEST GENETICI E IL LORO CORRETTO UTILIZZO NELLA PRATICA CLINICA. CONCETTO DI VALIDITÀ ANALITICA, VALIDITÀ CLINICA E UTILITÀ CLINICA DEI BIOMARCATORI GENOMICI.

-ESTENSIONI ED ECCEZIONI ALLE LEGGI DI MENDEL.

-CONSULENZA GENETICA, ANALISI DEL PEDIGREE, RISCHIO EMPIRICO.

-GENETICA NEI TRATTI MULTIFATTORIALI E NELLE MALATTIE COMPLESSE.

-GENOMICA MEDICA:

Genomica del cancro e medicina personalizzata:

Sindromi tumorali ereditarie: • Sindrome del carcinoma mammario e ovarico ereditario (HBOC)

Sindrome di Lynch (carcinoma colorettale ereditario non poliposico)

Consulenza genetica oncologica.

-TEST DI FARMACOGENETICA E UTILITÀ CLINICA: VARI ESEMPI ILLUSTRATIVI DETTAGLIATI DI APPLICAZIONE DELLA FARMACOGENOMICA NELLA SICUREZZA ED EFFICACIA DEI FARMACI IN DIVERSI AMBITI:

Oncologia (Farmacogenetica di: Irinotecan, Tamoxifene, Cetuximab, Herbitux);

Malattie cardiovascolari (Warfarin, Statine);

Malattie infettive (HIV: Abacavir e reazioni avverse gravi; HCV: efficacia del Peg Interferon e polimorfismi IL28.);

Terapia farmacogenetica del dolore e dell'anestesia.

-APPLICAZIONI DELLA PGX NELLA SCOPERTA DI FARMACI, NEI TRIAL CLINICI E NELLA FARMACOVIGILANZA.

-DAL GENOTIPING ALL'ETICHETTATURA DEI FARMACI – SFIDE.

-FARMACOGENOMICA; IL CONTESTO REGOLATORIO.

PROGRAM

- GENERAL LEARNING OBJECTIVES

The general objectives of the course are to understand the basic scientific principles related to cancer and its treatment, and to ensure that the student acquires clinical competence in the investigation and management of neoplastic diseases.

- SPECIFIC LEARNING OBJECTIVES

- Epidemiology of cancer, including risk factors.

- Carcinogenesis, cancer growth and proliferation, cancer immune tolerance.

- Pathophysiology of the immune system.

- Basic scientific knowledge, including molecular biology, biochemistry, pathophysiology, pharmacology, growth kinetics, genetics, endocrinology and immunology, as they relate to the understanding of cancer and its diagnosis and treatment.

MEDICAL ONCOLOGY

- Assessment and investigations of patients with cancer, including history, physical examination, laboratory and imaging techniques.
- Performance Status Evaluation (Karnofsky and ECOG scores).
- Tumour staging .
- Response Evaluation Criteria In Solid Tumours (RECIST).
- Principles of therapy of oncological diseases and clinical effects of therapeutic approaches used.
- Cytotoxic approach: therapeutic aims (neoadjuvant, adjuvant, palliatives approaches).
- Radiotherapy.
- Targeted Therapies.
- Immune anti-cancer agents.
- Supportive care.
- Drug resistance.
- Management of medical emergencies and complications resulting from cancer or its treatment.

IT: -OBIETTIVI FORMATIVI GENERALI

Gli obiettivi generali del corso sono comprendere i principi scientifici di base relativi al cancro e al suo trattamento, e garantire che lo studente acquisisca competenze cliniche nella valutazione e nella gestione delle malattie neoplastiche.

-OBIETTIVI FORMATIVI SPECIFICI

- Epidemiologia del cancro, inclusi i fattori di rischio.
- Carcinogenesi, crescita e proliferazione tumorale, tolleranza immunitaria al tumore.
- Fisiopatologia del sistema immunitario.
- Conoscenze scientifiche di base, incluse biologia molecolare, biochimica, fisiopatologia, farmacologia, cinetica di crescita, genetica, endocrinologia e immunologia, in relazione alla comprensione del cancro, della sua diagnosi e del suo trattamento.
- Valutazione e indagini dei pazienti oncologici, inclusi anamnesi, esame obiettivo, tecniche di laboratorio e di imaging.
- Valutazione dello stato funzionale (scale di Karnofsky ed ECOG).
- Stadiazione tumorale.
- Criteri di valutazione della risposta nei tumori solidi (RECIST).
- Principi di terapia delle malattie oncologiche ed effetti clinici degli approcci terapeutici utilizzati.
- Approccio citotossico: obiettivi terapeutici (approcci neoadiuvante, adiuvante e palliativo).
- Radioterapia.
- Terapie mirate.
- Agenti immunoterapici antitumorali.
- Cure di supporto.
- Resistenza ai farmaci.
- Gestione delle emergenze mediche e delle complicanze derivanti dal cancro o dal suo trattamento.

TEXTBOOKS

Internal Medicine

Harrison – Principles of Internal Medicine.

Medical Genetics

Medical Oncology - DeVita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology. Ed: Lippincott Williams and Wilkins. 10th Edition 2015 ISBN 9781451192940

- John E. Niederhuber. Abeloff's Clinical Oncology. Ed Elsevier. 5th Edition ISBN: 978-1-4557-2865-7

EXAM COMMISSION

EN: The Coordinator, full Professors of the disciplines, Professors of similar disciplines, Specialists of the subject, compose the exam Commission of the Integrated Course.

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Sbraccia Paolo, President
Federici Massimo
Di Cola Giovanni
Guglielmi Valeria
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PREREQUISITES: Previous knowledge and competence in the following subjects:

Histology and Embryology, Physiology and Pathophysiology, Biology and Genetics, Biochemistry and Molecular biology, Microbiology, Systematic Pathology 1/2/3, Neurology, Psychiatry, Orthopedics and Rheumatology.

The specific learning outcomes of the program are coherent with the general provisions of the Bologna Process and the specific provisions of EC Directive 2005/36/EC. They lie within the European Qualifications Framework (Dublin Descriptors) as follows:

1. Knowledge and Understanding

- Assess the physiologic principles, which govern the function of the main body systems and the alterations induced by functional and structural abnormalities.
- Describe the main aspects of general pathology and explain the physiopathologic mechanisms underlying the concept of benign and malignant disorders as well as reversible and irreversible cellular damage
- Demonstrate knowledge about the mechanism of cell cycle maintenance and regulation, the factors affecting it and their consequences.
- Understand the core principles of acute and chronic inflammation in relation to the molecular, systemic and clinical aspects.
- Relate the general principles, terminology, and modes of spreading of disease to the study of Systemic Pathology and the ways in which pathology contributes to the understanding of patient presentation in a clinical setting.
- Focus on each organ and describe the pathogenesis of the main disease.
- Correlate basic disease states studied at a cellular and gross anatomic level with the overt clinical signs and symptoms seen in those disorders.
- Learn to interpret appropriate laboratory and diagnostic studies.

2. Applying Knowledge and Understanding

- Apply the diagnostic procedure in pathology, through introduction of the differential diagnostic methods at the clinical level.
- Apply a basic understanding of histopathology and morbid anatomy to the examination of microscopic sections and gross specimens, respectively, displaying pathologic processes.
- Provide a differential diagnosis based on specific clinical data, providing a comprehensive explanation of the underlying reasoning.
- Learn the practical aspects of the pathologic diagnostic instruments, when to use them and how to perform them.

3. Making Judgements

- Recognize the importance of an in-depth knowledge of the topics consistent with proper medical education.
- Identify the fundamental role of proper theoretic knowledge of the subject in the clinical practice.

4. Communication Skills

- Present the topics orally in an organized and consistent manner.
- Use of proper scientific language coherent with the topic of discussion.

5. **Learning Skills**

- Identify the possible use of the acknowledged skills in the future career.
- Assess the importance of the acquired knowledge in the overall medical education process.