Masters Degree in Medicine and Surgery

INTEGRATED TEACHING: Internal medicine and medical genetics II

NUMBER OF CFU: 8

SSD: MED/09, MED/06, MED/03, Med/45

RESPONSIBLE PROFESSOR: Prof.ssa Cinzia Ciccacci

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Module: Internal Medicine
SSD: MED/09
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Professor: Giuseppe Paolisso
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Module: Medical Oncology
SSD: MED/06
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Professor: Silvia Riondino
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Module: Medical Genetics
SSD: MED/03
Number of CFU: 1
Professor: Cinzia Ciccacci
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Module: Nursing science general, clinical and pediatric
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PREREQUISITES

For the integrated course in Internal Medicine and Genetics II, previous knowledge and skills in the following subjects are required: human anatomy, histology and embryology, physiology and pathophysiology, general pathology, biology and genetics, biochemistry and molecular biology. Basic knowledge are required on the principles of biology and immunobiology of tumors, of the cellular

and molecular pathogenetic mechanisms that lead from neoplastic transformation and growth to invasion and metastasis.

LEARNING OBJECTIVES:

The integrated teaching of Internal Medicine and Medical Genetics 1 aims to provide students with knowledge related to diagnostic and therapeutic expertise in the field of internal, genetic and oncologic pathologies in order to complete the professional profile as a future doctor. In particular, it aims to provide notions relating to: multimorbidity and polypharmacy in the elderly patient as well as the main cardio-metabolic pathologies which are the most relevant causes together with cancer. Students will learned about the application of genetic tests in the field of personalized medicine and the molecular characterization and diagnosis of genetic diseases. They will acquire notions about the predisposing conditions and the clinical characteristics of the various neoplastic diseases that define diagnostic procedures; knowledge of prognostic and predictive factors linked to the characteristics related to the neoplasm and to the patient, to understand the strategy for the management of different tumors, taking into account the therapeutic options available in the various phases of the disease and their side effects in a risk/benefit assessment perspective. Students will also acquire knowledge on patient assessment and skills in the use of central venous vascular devices, tracheostomy and tracheal tube, oxigen therapy and non invasive ventilation.

LEARNING OUTCOMES

Knowledge and Understanding:

At the end of this teaching, the student should know:

<u>Internal Medicine :</u>

- Understand the main pathophysiological and therapeutic mechanisms of pathologies in the elderly
- Describe the mechanisms of multifactoriality

- Demonstrate knowledge of the therapeutic principles relating to the treatment of the main pathologies of the elderly

Medical Oncology

- acquire knowledge and understand the oncology issues
- attitude to understand not only advanced textbooks, but also some cutting-edge themes and more advanced oncology research protocols

Medical Genetics

- Understand and use the right genetic terminology
- Describe the characteristics of multifactorial inheritance
- Acquire notions relating to the transmission and diagnosis of genetic diseases

Nursing science

- Describe the patient assessment, the function and the right use of central venous vascular access
- Describe the patient assessment, the function and the right use of tracheostomy and

  endotracheal tube
- Describe the patient assessment, the function and the right use of oxygen therapy and

  non invasive ventilation

Applying knowledge and understanding

At the end of this teaching, the student will be able to:

Internal Medicine

- Know how to deal with differential diagnostics in elderly patients with multipathology and multifactorial nature

Medical Oncology

- to apply their knowledge with a scientific and experimental method to the study of oncological pathologies and to the proper application to working procedures and experimental protocols in full autonomy and in collaboration with a multidisciplinary team.

Medical Genetics

- Examine pedigrees, clinical and molecular genetic data useful for genetic counseling and learn about the main types of genetic tests and their correct use.
- Understand and explain the characteristics, the transmission and diagnosis of different types of genetic diseases

Nursing science

- Understand, explain and use the central vascular devices
- Understand, explain and use the tracheostomy and the endotracheal tube
- Understand, explain and use the oxygen therapy and the non invasive ventilation

Communication skills

At the end of this teaching, the student will be able to:

Internal Medicine

- Describe with a scientific language clinical cases in which the typical characteristics of the elderly patient are present.

Medical Oncology

- adequately expose the oncology disease condition he or she is describing,
- demonstrate to have learned appropriate scientific language for the purpose of correct and rigorous communication, describing the necessary diagnostic steps in oncology and the main therapeutic opportunities, using correct terminology

Medical Genetics

- Fully describe genetic phenomenon, demonstrating the acquisition of a scientific language suitable for the purpose of accurate and rigorous communication.

Nursing science

- Fully describe the patient assessment, the function and use central venous devices, tracheostomy and endotracheal tube, oxygen therapy and non invasive ventilation, demonstrating the acquisition of a scientific language suitable for the purpose of accurate and rigorous communication.

Making judgements

At the end of this teaching, the student should know:

Internal Medicine

- Demonstrate to have learned the procedural methodology necessary for the diagnosis and therapy of elderly patients with multipathology

Medical Oncology

- possess the ability to collect and interpret data deemed useful for integrating and applying knowledge to clinical reasoning related to the approach to the patient diagnosed with cancer, and its complications, formulating an independent judgment.
- Demonstrate to be independent even from the point of critical judgment on social, scientific or ethical issues related to cancer.

Medical Genetics

- Acquired the ability to synthesize and correlate different topics, and critically use genetic tests for the molecular diagnosis of genetic diseases.

Nursing science

- Acquired the ability to synthesize and correlate different topics, and critically use the knowledge acquired on the techniques presented in classes (central venous devices, tracheostomy and endotracheal tube, oxygen therapy and non invasive ventilation)

Learning ability

At the end of the course, the student will have acquired skills and appropriate learning methods for deepening and enhancing their competencies in the field of internal medicine, medical oncology, medical genetics, and nursing sciences, including consultation of scientific literature.

COURSE SYLLABUS

Syllabus Internal Medicine

- Multimorbidity and polypharmacy: evidence from clinical cases
- Dysmetabolic pathologies (diabetes mellitus, hypercholesterolemia, hypertriglyceridemia)
- Cardiovascular pathologies (myocardial infarction, heart failure with normal or low ejection fraction - the various forms of arterial hypertension - cardiac valvular diseases)
- Respiratory diseases (COPD – chronic cor pulmonale, asthma, pulmonary hypertension, lung cancer)
- Endocrine pathologies (hyperthyroidism, hypothyroidism, Cushing's, Addison's,)
- Kidney diseases (glomerular nephritis, nephrotic syndrome)
- Gastro-enteric pathologies (Crohn, Ulcerative recto-colitis - liver cirrhosis and biliary cirrhosis)
- Splenomegalies

Syllabus Medical Oncology

- Cancer immunoediting, new insights in carcinogenesis
- Prevention in oncology (primary, secondary, and tertiary)
- Prognostic and predictive factors
- Biomolecular parameters for tumour characterization and personalization of therapies
- Tumour markers and their reasoned use. The liquid biopsy
- Assessment and investigations of patients with cancer, including history, physical examination, laboratory and imaging techniques- Performance Status Evaluation (Karnofsky and ECOG scores)

- Principles of therapies: surgical, radiation and medical
- Treatment settings: indications (adjuvant, neoadjuvant, curative, and palliative) and intent (cure, increased survival, palliation, and improved quality of life)
- Routes and techniques of antitumor drug administration, cytotoxic drug dosing (chemotherapy), hormones and anti-hormones (endocrine therapy), molecular-targeted and biologic drugs (target therapy and immunotherapy).
- Antineoplastic drug resistance, dose intensity and density, monotherapy and polychemotherapy
- Side effects of medical therapy, use of supportive therapy (antalgic, nutritional, transfusion, psychological), and treatment of complications and emergencies.
- Cancer-associated venous thromboembolism
- Methods of assessing objective response to treatment, the RECIST criteria
- Clinical trials
- Artificial Intelligence in Oncology

Syllabus Medical Genetics

- Multifactorial inheritance and personalized medicine: complex diseases, study approaches and risk profiles. Pharmacogenetics
- Atypical mechanisms of inheritance: diseases caused by genomic imprinting defects. Epigenetic modifications of DNA. Angelman syndrome and Prader-Willi syndrome. Beckwith-Wiedemann syndrome
- Dynamic mutation diseases: Microsatellites and expansion mechanisms. Classification of dynamic mutation pathologies. Myotonic dystrophy, Huntington's disease, Fragile-X syndrome
- Cystic Fibrosis and Pathologies related to the CFTR gene. Clinical aspects, genotype-phenotype correlation.
- Genetic Oncology: Susceptibility genes to hereditary forms and Genetic Tests

Syllabus Nursing science

- Nursing skills on central vascular access devices: cvc, picc, port-a-cath

- Nursing skills on Tracheostomy and endotracheal tuve
- Nursing skills on oxygen therapy and non invasive ventilation

TEACHING METHODS

The integrated teaching is structured with lectures, 40 hours of Internal Medicine, 30 hours of Medical Oncology, 10 hours of Genetics, and 10 hours of General, Clinical, and Pediatric Nursing Sciences.

The professors use educational tools such as organized presentations in PowerPoint files with explanatory diagrams, illustrations, and images to describe the module contents. Videos and animations will be used for the integration of the processes discussed in class. Interactive lessons are scheduled.

The lessons will be conducted in English.

Midterm assessments might be scheduled. Attendance is mandatory.

METHODS OF LEARNING ASSESSMENT

The exam consists in an oral test. In the oral test, the student is given the opportunity to demonstrate the preparation by discussing course topics, reasoning, and displaying the ability to make connections and express themselves using appropriate scientific language.
The final evaluation will be the result of a weighted average between the evaluations of the integrated course modules.
The exams will be assessed according to the following criteria:

- Insufficient : significant deficiencies and/or inaccuracies in knowledge and understanding of the topics; limited analytical and synthesis skills, frequent generalizations.
- 18-20: knowledge and understanding of the topics are barely sufficient with possible imperfections; adequate skills in analysis, synthesis, and independent judgment.

- 21-23: knowledge and understanding of the topics are routine; correct skills in analysis and synthesis with coherent logical reasoning.
- 24-26: reasonable knowledge and understanding of the topics; good skills in analysis and synthesis with arguments expressed rigorously.
- 27-29: comprehensive knowledge and understanding of the topics; remarkable skills in analysis and synthesis. Good independence in judgment.
- 30-30L: Excellent level of knowledge and understanding of the topics. Remarkable skills in analysis, synthesis, and independence in judgment. Arguments expressed in an original manner.

RECOMMENDED TEXTS AND BIBLIOGRAPHY

Internal Medicine

HARRISON ‘s Principles of Internal Medicine 21th edition (1st and 2nd volume)

Medical Oncology:

National and International guidelines released from AIOM/ESMO/ASCO Societies
DeVita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology. Ed: Lippincott Williams and Wilkins. 12th Edition 2022 ISBN: 978-1975184742
John E. Niederhuber. Abeloff's Clinical Oncology. Ed Elsevier. 6th Edition ISBN: 978-0323476744

Medical Genetics

Medical Genetics by Jorde et al. Elsevier Edition. Pdf of the lessons and scientific articles will be provided by the Teacher

Nursing science

Potter & Perry (2017). Fundamentals of Nursing (9th Ed.) St. Louis, Missouri: Elsevier.
PPT Slides. Students are required to study the provided slides and supplement their learning with the
textbook.