Radiology, diagnostic imaging and radiotherapy techniques

INTEGRATED TEACHING: CLINICAL AND MEDICAL SCIENCES I
SSD: MEDS-19/A (ex Med/33), MEDS-09/A (ex Med/06), MEDS-16/A (ex Med/28)
CFU : 7
RESPONSIBLE TEACHER: PROF. Alberto Bongiovanni
E-MAIL: alberto.bongiovanni@unicamillus.org

MODULE: Locomotor system diseases
SSD: MEDS-19/A (ex Med/33)
Number of credits: 2
Teacher name: Prof. Simone Cerciello e-mail: simone.cerciello@unicamillus.org
Prof. Marco Maiotti e-mail: marco.maiotti@unicamillus.org

MODULE: Medical Oncology
SSD: MEDS-09/A (ex Med/06)
Number of credits: 3
Teacher name: Prof. Alberto Bongiovanni e-mail: alberto.bongiovanni@unicamillus.org

MODULE: Elements of Stomatological Diseases
SSD: MEDS-16/A (ex Med/28)
Number of credits: 2
Teacher name: Prof. Ilaria Giovannacci e-mail: ilaria.giovannacci@unicamillus.org

PREREQUISITES

The student must have notions of anatomy and basic concepts of physiology. For the application in the specific field, the student must also know the basics of radiological techniques, including the radiological projections of the main osteoarticular districts and the basics of advanced radiology (MRI, CT, etc.). Knowledge of the principles of biology and immunobiology of tumours, of cellular and molecular pathogenetic mechanisms that lead from transformation and neoplastic growth to invasion and metastasis.

LEARNING OBJECTIVES

The educational purposes of the teaching are oriented to provide students with the necessary knowledge of orthopaedic and traumatic pathology in adulthood and developmental age with particular attention to degenerative and traumatic injuries of the joints (shoulder, elbow, hip, knee, and ankle). The student must acquire theoretical knowledge relating to real and radiographic anatomy and to the main pathologies of the jawbones and the stomatognathic system. He must also identify the main diagnostic questions posed by the dental specialist and know the radiographic examinations relevant to this district. For each pathological condition, the classification criteria, the main clinical signs, the necessary radiographic projections as well as the most appropriate radiological techniques for the definition of the pathology will be described. The student will have to know the predisposing conditions and the clinical characteristics of the different solid neoplasms to define a diagnostic procedure. Understanding the prognostic and predictive factors based on the characteristics related to the neoplasm and the patient will allow us to comprehend the management strategy for different tumors, taking into account the therapeutic options applicable at various stages of the disease and their side effects, in order to integrate the knowledge specific to the professional profile within a multidisciplinary collaboration perspective. Furthermore, possessing basic knowledge of Medical Imaging and Interventional Radiology, the student will be able to further enrich their skills with those of other

healthcare professionals. Furthermore, the student, possessing the basic notions relating to Diagnostic Imaging and Interventional Radiology, will be able to further enrich his / her skills with those of other professional healthcare professionals.

LEARNING OUTCOMES

Knowledge and understanding

At the end of this course, the student will have to demonstrate knowledge and understanding in this field of study, which represents a post secondary level, and a level of autonomy of deepening not only of advanced textbooks, but also of research protocols and avant-garde in its field of studies treated during the entire educational path

Applying knowledge and understanding

At the end of the course, the student will be able to apply their knowledge and understanding skills in order to demonstrate a professional approach to their work, and have adequate skills both to devise and support arguments and to solve problems in their field of study and , in particular, in the study of oncological pathologies through the correct conduct of work procedures and experimental protocols in full autonomy and in collaboration with the medical body. Use the acquired anatomical and stomatological pathologies knowledge to be able to relate to the dental specialist in performing the necessary radiographic examinations. Recognize radiographic artefacts to be able to discern whether the examination has been correctly performed. In addition, the student will possess appropriate skills both to devise and support arguments and to solve problems in his or her field of study and, in particular, to the study of oncological pathologies and to the proper application to working procedures and experimental protocols in full autonomy and in collaboration with the medical staff.

Communication skills

At the end of the course, the student must be able to apply their knowledge and understanding skills in order to demonstrate a professional approach to work and have adequate skills both to devise and support arguments and to solve problems in their field of study and, in particular, in the study of odontostomatologic and oncological pathologies through the correct execution of work procedures and experimental protocols in full autonomy and in collaboration with the medical body.

Making judgements

At the end of the course, the student must have the ability to collect and interpret the data deemed useful to integrate and apply knowledge to a clinical reasoning related to the approach to the patient with diagnosis of cancer and its complications, making an independent judgment. This will also make it independent from the point of view of the critical judgment on social, scientific or ethical issues connected to them.

COURSE SYLLABUS

MODULE OF LOCOMOTIVE SYSTEM

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- Shoulder instability, rotator cuff pathology
- Clinical examination and imaging of choice according to clinical suspicion
- Ankle instability Imaging of choice
- Ankle fractures
- Clinical examination and imaging
- Muscle injuries

- Foot pathology

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- Traumatic pathology
  - Fractures
  - Dislocations
  - Distortion
- Knee pathology (ligaments, menisci, patellar instability)
- Hip pathology
- Arthritis
- Capsulo-ligamentous injuries of the knee
- Paediatric pathology

MODULE OF MEDICAL ONCOLOGY

- General principles of epidemiology and cancer prevention.
- Prognostic and predictive factors.
- Carcinogenesis, cell growth and proliferation. Immune tolerance
- Approach to the neoplastic patient, including anamnestic history, physical examination, laboratory and instrumental diagnostic data. Performance Status Assessment (according to Karnofsky and ECOG)
- Natural history of the most frequent tumours: breast, lung, prostate, colorectal
- Staging of tumours
- RECIST (Response Evaluation Criteria In Solid Tumours) criteria for the definition of response to therapy
- Focus on Bone metastases: from diagnosis to therapy
- Therapy principles: surgical, radiant, medical (neoadjuvant, adjuvant, metastatic and palliative), target therapy and immunotherapy. Resistance to drugs
- Side effects of cancer therapies and their management
- Basis of scientific research

ELEMENTS OF STOMATOLOGICAL DISEASES

- Anatomy of the maxillary and stomatognathic systems with special reference to bone and dental structures
- Outlines of principal pathologies.
- Dental anomalies (shape, volume, number, structure, position, location) and eruption time
- Dental trauma
- Tooth decay
- Periodontal disease
- Apical periodontitis
- Cystic pathologies of the jaw bones
- Major odontogenic neoplastic diseases, tumors of the jaw bones and salivary glands, osteonecrosis of the jaw
- Fractures of the maxillary bones
- Pathologies of the temporomandibular joint
- Radiographic examinations used in diagnosis of these diseases: Endoral Radiography, Orthopanoramics, Cone Beam CT, Spiral CT, Nuclear Magnetic Resonance Imaging.

COURSE STRUCTURE

Frontal and interactive lessons with the aid of slides and continuous verification of knowledge, understanding and learning of the students.

COURSE GRADE DETERMINATION

The preparation of the students will be verified with a written exam followed by an oral test. The written test will consist of questions with multiple choice answers; for each correct answer a point will be awarded. The final score of the written test will be given by the sum of the partial scores assigned to each question and will be expressed in thirtieths. To access the oral exam, the student must have completed at least a minimum of 18/30. During the oral exam, the examining commission will assess the student's ability to apply knowledge and ensure that the skills are adequate to support and solve problems. The following will also be assessed: making judgments, communication skills and learning skills as indicated in the Dublin descriptors.
The result will be communicated to the student after the collegial assessment of the Integrated Course, established according to the following criteria:

Not suitability: important shortcomings and/or inaccuracy in the knowledge and understanding of the topics; limited analysis and synthesis skills, frequent generalizations.
18-20: Knowledge and understanding of the topics is just sufficient.
21-23: Discreet Knowledge and understanding of the topics.
24-26: Good knowledge and understanding of the topics.
27-29: Full knowledge and understanding of the topics.
30-30L: Excellent level of knowledge and understanding of the topics.
For scores of less than 18 (non-suitability): the exam of the whole Integrated Course will be repeated in a subsequent call.

OPTIONAL ACTIVITIES

Students will have the opportunity to carry out theoretical / practical exercises and participate in seminars. The teachers will provide constant support during and after the lessons

READING MATERIALS

MODULE OF LOCOMOTIVE SYSTEM

- Greene Walter. “Netter's Orthopaedics” Elsevier - Health Sciences Division, United States (2006). ISBN 10: 1929007027 ISBN 13: 9781929007028

MODULE OF MEDICAL ONCOLOGY

- Chmielowski B., Territo M.C. Manual of Clinical Oncology. Ed: Lippincott Williams and Wilkins. ISBN 9781496349576

MODULE ELEMENTS OF STOMATOLOGICAL DISEASES

- Oxford Handbook of oral and Maxillofacial surgery. Cascarini, Shilling, Gurney, Brennan. Oxford University Press 2018
- Oxford Handbook of clinical dentistry. Mitchell, Mitchell, Longridge, Clarke, Aftab. Oxford University Press 2019
- Dental Radiography. Principles and techniques. Iannucci, Howerton. Elsevier 2016

- New Trends in Myofunctional Therapy: Occlusion, Muscles and Posture a cura di Sabina Saccomanno e Licia Coceani Paskay (edizione originale inglese 2020) 1st ed. ISBN 978-88-7051-629-6
- Anatomia Radiologica e Cefalometria a cura di Roberto Deli e Sabina Saccomanno, pubblicato dalla casa editrice Aracne
- Radiologia odontostomatologica per odontoiatri , medici e studenti Renato Nessi e Luca Vigano' Piccin
- Bernardi S, Angelone AM, Macchiarelli G. Anatomy in dentistry: From the beginnings to contemporary reality. Clin Anat. 2022 Sep;35(6):711-722. doi: 10.1002/ca.23869. Epub 2022 Apr 9. PMID: 35368109.
- Gauer RL, Semidey MJ. Diagnosis and treatment of temporomandibular disorders. Am Fam Physician. 2015 Mar 15;91(6):378-86. PMID: 25822556.
- Abati S, Bramati C, Bondi S, Lissoni A, Trimarchi M. Oral Cancer and Precancer: A Narrative Review on the Relevance of Early Diagnosis. Int J Environ Res Public Health. 2020 Dec 8;17(24):9160. doi: 10.3390/ijerph17249160. PMID: 33302498; PMCID: PMC7764090.
- Sedghizadeh PP, Sun S, Jones AC, Sodagar E, Cherian P, Chen C, Junka AF, Neighbors JD, McKenna CE, Russell RGG, Ebetino FH. Bisphosphonates in dentistry: Historical perspectives, adverse effects, and novel applications. Bone. 2021 Jun;147:115933. doi: 10.1016/j.bone.2021.115933. Epub 2021 Mar 20. PMID: 33757899; PMCID: PMC8076070.