



Syllabus Master's Degree Course in Medicine and Surgery a.y. 2026 - 2027

Diseases of the bones and joints

Fourth year, first semester (4 academic credits [CFU])

Teachers

Subject	Academic credits (CFU)	Lecturer
Orthopedics	3	PAVONE Vito
Radiology	1	TBD

Learning outcomes

Subject	Learning outcomes
Orthopedics	Knowledge and understanding By the end of the module, students are expected to: • Acquire knowledge of the most common musculoskeletal conditions encountered in orthopedic and traumatic practice across the pediatric, adult, and older adult populations, including their etiology, pathophysiology, and clinical manifestations, as well as the main approaches to their prevention, diagnosis, and treatment. • Acquire knowledge on the basic principles of surgical techniques used in the management of main orthopedic and traumatic disorders. • Understanding indications for surgical or conservative treatments. • Understand the principles of evidence-based medicine and diagnostic and therapeutic appropriateness in orthopedic and traumatic disorders, including the ability to evaluate the risks, benefits, and costs of different clinical options. Applying knowledge and understanding By the end of the module, students are expected to: • Apply the acquired knowledge to taking a comprehensive medical history and performing a physical examination in patients with the main orthopedic and traumatic conditions. • Apply the acquired knowledge to identify and interpret the main signs and symptoms of common orthopedic and traumatic conditions. • Be able to perform a comprehensive physical examination of the patient.

	• Be able to formulate appropriate diagnostic hypotheses based on the patient's history, clinical presentation, and physical examination findings • Be able to apply appropriate therapeutic, preventive, and rehabilitative measures for individual patients with common orthopedic and traumatic disorders. • Demonstrate the ability to identify and implement the principles of evidence-based medicine to the clinical management of patients with common orthopedic and traumatic conditions. • Demonstrate the ability to assess the need for specialist consultation and to identify when referral to an orthopedic is appropriate, based on the specific clinical condition of the patient.
Radiology	Knowledge and understanding By the end of the module, students are expected to: • Understanding the appropriate diagnostic pathway of main orthopedic diseases. • Acquire knowledge on key imaging modalities used in the evaluation of orthopedic diseases. • Understand how to interpret diagnostic imaging reports. • Understanding the indications, strengths, and limitations of common radiological techniques. Applying knowledge and understanding By the end of the module, students are expected to: • Be able to correlate pathophysiological knowledge with the patient's signs and symptoms and the results of diagnostic investigations, to formulate appropriate diagnostic hypotheses for orthopedic diseases.

Prerequisites

Subject	Prerequisites
Orthopedics	Attainment of the educational objectives set by prerequisite courses.
Radiology	

Course contents

Subject	Course contents
Orthopedics	• Musculoskeletal trauma in children and adolescents: general principles; contusions, sprains, and dislocations; fractures and their complications; and physeal injuries. • Pediatric musculoskeletal deformities: angular and axial deformities, including coxa vara and coxa valga, genu varum and genu valgum; developmental dysplasia of the hip; slipped capital femoral epiphysis; and congenital clubfoot. • Osteochondroses in children and adolescents: Legg–Calvé–Perthes disease, Scheuermann disease, Osgood–Schlatter disease, Sever disease, and other common osteochondroses. • Spinal and lower-limb disorders in children and adolescents: flexible flatfoot, spinal postural and structural deformities, and low back pain.

	• Knee, ankle, and shoulder injuries: meniscal and capsuloligamentous injuries of the knee and ankle; glenohumeral instability. • Upper extremity fractures: fractures of the humerus, clavicle, elbow, forearm, wrist, carpal bones, metacarpals, and phalanges. • Lower extremity fractures: fractures of the femoral neck and shaft, femoral condyles, patella, tibial plateau, tibial and fibular shafts, ankle, and foot. Supplementary activities • Guided study and critical review of the scientific literature and clinical practice guidelines. • Clinical case-based learning.
Radiology	• Basic principles of musculoskeletal imaging: plain radiography, ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), and the role of each imaging modality in the evaluation of musculoskeletal disorders and trauma. • Radiographic evaluation of musculoskeletal disorders: systematic approach to the interpretation of plain radiographs; assessment of bone alignment, joint spaces, bone density, fractures, dislocations, degenerative changes, and other common musculoskeletal abnormalities. • Imaging of acute musculoskeletal trauma: radiographic and CT evaluation of fractures and dislocations; assessment of fracture patterns, alignment, displacement, and complications; indications for CT in complex fractures and trauma. • MRI of the musculoskeletal system: basic principles and clinical applications; evaluation of bone marrow, cartilage, muscles, tendons, ligaments, menisci, and other soft tissues. • Imaging of the spine: radiographic, CT, and MRI evaluation of spinal trauma, degenerative diseases, spinal deformities, and common causes of back pain. • Imaging of the shoulder and upper extremity: radiographic, ultrasound, CT, and MRI evaluation of shoulder instability, rotator cuff and tendon disorders, and fractures and other common traumatic conditions of the upper extremity. • Imaging of the hip and pelvis: radiographic, ultrasound, CT, and MRI evaluation of developmental dysplasia of the hip, osteonecrosis, fractures, degenerative and inflammatory disorders, and other common hip and pelvic conditions. • Imaging of the knee and lower extremity: radiographic, ultrasound, CT, and MRI evaluation of meniscal and ligamentous injuries, osteochondral lesions, fractures, and degenerative and other common disorders of the knee and lower extremity. • Imaging of pediatric musculoskeletal disorders: radiographic, ultrasound, and MRI evaluation of developmental abnormalities, physeal injuries, osteochondroses, and common pediatric orthopedic conditions. • Bone and joint infection and tumor imaging: basic imaging features of osteomyelitis, septic arthritis, primary bone tumors, and metastatic bone disease; selection of appropriate imaging modalities. • Image-guided musculoskeletal procedures: basic principles and clinical applications of ultrasound-, CT-, and fluoroscopy-guided diagnostic and therapeutic procedures.

Assessment methods

Subject	Assessment methods
Orthopedics	The final assessment of acquired knowledge is conducted by an oral exam. The grade is expressed on a scale of thirty, up to a maximum of 30/30 cum laude (with honors). The final score is a single grade for the entire Integrated Course. The examination board consists of all teachers of the modules that make up the Integrated Course. Students will not receive individual grades or evaluations for the single modules; instead, they will receive one final grade reflecting their overall performance in the Integrated Course. The oral examination consists of an interview and clinical case discussion during which questions will cover at least three different topics from the course curriculum. The assessments aim to evaluate: i) the level of knowledge of the most common orthopedic and traumatic conditions, including their etiology, pathophysiology, clinical manifestations, and principles of diagnosis and treatment (knowledge and understanding); ii) the ability to apply the acquired knowledge to prevent, assess, recognize and manage, common orthopedic and traumatic conditions, (applying knowledge and understanding); iii) the ability to apply the acquired knowledge to critically analyze clinical cases by integrating clinical with imaging findings, and to independently implement an appropriate diagnostic and therapeutic pathway based on the individual patient's clinical condition (making judgements); iv) clarity of expression and proficiency in medical and scientific language (communication skills); v) the ability to critically appraise the scientific evidence relevant to orthopedic and traumatic conditions and to apply evidence-based principles to clinical decision-making (learning skills). The assessment of learning can also be conducted remotely if the conditions necessitate it.
Radiology	To ensure equal opportunities and in compliance with current laws, interested students may request a personal interview in order to plan any compensatory and/or dispensatory measures based on educational objectives and specific needs. Students can also contact the CInAP (Centro per l'integrazione Attiva e Partecipata – Servizi per le Disabilità e/o i DSA) referring teacher within their department (https://www.cinap.unict.it/content/referenti). For the assignment of the final grade, the following parameters will be considered: • Score 29-30 with honors: The student demonstrates an in-depth knowledge of the topics, promptly and correctly integrates and critically analyzes presented situations, independently solving even highly complex problems. They possess excellent communication skills and command medical-scientific language proficiently. • Score 26-28: The student has a good understanding of the topics, is able to integrate and critically and logically analyze presented situations, can fairly independently solve complex problems, and presents topics clearly using appropriate medical-scientific language. • Score 22-25: The student has a fair understanding of the topics, although it may be limited to the main areas. They can integrate

	and critically analyze presented situations, although not always in a linear fashion, and present topics fairly clearly with moderate language proficiency. • Score 18-21: The student has minimal knowledge of the topics, possesses modest ability to integrate and critically analyze presented situations, and presents topics sufficiently clearly, although their language proficiency may be underdeveloped. • Exam not passed: The student lacks the minimum required knowledge of the core content of the course. Their ability to use specific language is minimal or nonexistent, and they are unable to independently apply acquired knowledge.
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Examples of common questions and/or exercises

Subject	Examples of common questions and/or exercises
Orthopedics	• What is the difference between a scoliotic paramorphism and a scoliotic dysmorphisms? • Classification of femoral neck fractures
Radiology	• What are the typical radiographic signs of an acute fracture on plain radiographs? • When is CT preferred over plain radiography for the evaluation of musculoskeletal trauma? • Which imaging modality is most appropriate for evaluating rotator cuff tears? • What are the main imaging findings of osteomyelitis on MRI?

Reference texts

Subject	Textbooks
Orthopedics	• Apley's System of Orthopaedics and Fractures Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.
Radiology	• Herring W. Learning Radiology. Elsevier Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.

Course format

Subject	Course format
Orthopedics	Teaching will be primarily delivered through in-person lectures, combining theoretical instruction with practical exercises. If teaching is conducted in blended or remote mode, appropriate adjustments will be made to ensure alignment with the objectives and content outlined in the Syllabus.
Radiology	

Attendance

Subject	Attendance
Orthopedics	Mandatory attendance.

Radiology	
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Course schedule

Subject	Course schedule
Orthopedics	Students may refer to the recommended textbooks to identify the correspondence between the topics covered in the syllabus and the relevant chapters.
Radiology	