

**COURSE DATA****Data Subject**

<b>Code</b>	34483
<b>Name</b>	Pathology of the locomotor system
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2024 - 2025

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1204 - Degree in Medicine	Faculty of Medicine and Odontology	4	Second term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1204 - Degree in Medicine	14 - Human clinical training III	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
ARTERO MORA, ARTURO	260 - Medicine
MINGUEZ REY, MARIA DE LA FE	40 - Surgery

**SUMMARY**

The subject of Pathology of the Locomotor System analyzes the conditions of the musculoskeletal system and its related diseases, reviewing the general and basic knowledge of musculoskeletal pathologies that may occur in both children and adults. This matter includes all local or systemic pathologies that affect the locomotor system that require surgical treatment (Orthopedic Surgery and Traumatology) as well as inflammatory and metabolic diseases that require medical treatment (Rheumatology).

**PREVIOUS KNOWLEDGE**



### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

The subject requires knowledge of anatomy and physiology of movement.

## COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

### 1204 - Degree in Medicine

- Obtain and elaborate a clinical history with relevant information.
- Perform a physical examination and a mental health assessment.
- Have the capacity to make an initial diagnosis and establish a reasonable strategy of diagnosis.
- Establish the diagnosis, prognosis and treatment, applying principles based on the best information available and on conditions of clinical safety.
- Indicate the most accurate therapy in acute and chronic processes prevailing, as well as for terminally ill patients.
- Plan and propose appropriate preventive measures for each clinical situation.
- Acquire proper clinical experience in hospitals, health care centres and other health institutions, under supervision, as well as basic knowledge of clinical management focused on the patient and the correct use of tests, medicines and other resources available in the health care system.
- Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- Proper organisation and planning of the workload and timing in professional activities.
- Team-working skills and engaging with other people in the same line of work or different.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.
- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- Is aware of tumour disease, its diagnose and management.
- Recognises, diagnoses, and guides the management of the main pathologies affecting the locomotor system.
- Reconocer, diagnosticar y orientar el manejo de las principales patologías infecciosas en los distintos órganos y aparatos.



- Recognises, diagnoses, and guides the management of the main pathologies affecting the immune system.
- Recognises, diagnoses and guides the management of the main paediatric pathologies.
- Is aware of the characteristics of prevalent pathologies in the case of elders.
- Recognises, diagnoses, and guides the management of vital risk situations.
- Knows how to perform a complete anamnesis, focused on the patient and orientated to various pathologies, interpreting its meaning.
- Knows how to evaluate modifications in clinical parameters at different ages.

## **LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)**

1. Knowledge of the causes for the pathology of the locomotor system and development of the capacity to trigger preventive measures. Knowledge of the clinical manifestations in each of the pathologies.
2. Capacity for the clinical and diagnostic evaluation of the pathology of the locomotor system.
3. Capacity to guide the treatment of the main diseases of the locomotor system in order to act in emergency cases and the capacity to manage the information sources, appropriated for their formative degree, within the general objectives of the medicine teaching.

## **DESCRIPTION OF CONTENTS**

### **1. Theoretical lessons in Traumatology**

1. Muscle traumatism. Injury, contusion and muscular rupture. Compartment syndrome: physiopathology, diagnosis and treatment.
2. Tendon structure and its slipping apparatus. Tendon injuries, tendon cicatrization and treatment principles of the tendon injuries. Inflammatory and degenerative pathology. Acute and chronic tenosynovitis and tenocellulitis. Tendinosis. Tendon rupture. Bursitis and ganglions: physiopathology, diagnosis and treatment principles.
3. Structure and function of the joints. Methods of joint evaluation: inspection, active and passive mobility, stability evaluation, and principles of their radiographic interpretation. Magnetic resonance and arthroscopy. Production mechanisms, clinical evaluation and treatment principles of the joint traumatism: sprain, luxation and joint injuries.
4. Fractures: concept, production mechanisms. Classification of the fractures and clinical interest. Immediate and late, local, area and general complications. Main sequels of the fractures: malunions, stiffness, joint degeneration and osteonecrosis.
5. Fracture healing: consolidation process and its variants according the kind of bone and immobilization



method used. Factors that influence the consolidation. General principles of the fracture treatment. Failure in the consolidation: etiology, diagnosis and treatment principles.

6. Fracture treatment. Emergency treatment. Treatment principles and methods of fractures: functional treatment, plaster immobilization, indications and principles of the surgical treatment, external fixation and fracture treatment by arthroplasty.

## **2. Theoretical lessons in Traumatology (continous)**

7. Osteoarticular infections: generalities. Acute, sub-acute and chronic osteomyelitis: etiopathogenesis, diagnosis and treatment. Pyogenic arthritis: etiopathogenesis, diagnosis and treatment. Granulomatous infections. Osteonecrosis: generalities.

8. Bone tumours. Clinical characteristics of the bone tumours. Staging. Radiological criteria of malignancy and benignity. Principles of the oncological treatment. Study of the most frequent tumours in the clinic.

9. Child traumatology and orthopedics I: fractures in the child. Traumatic epiphysiolysis. Osteonecrosis and osteochondrosis.

10. Child traumatology and orthopedics II: congenital malformations and disorders in the foot growth. Hip growth.

11. Hip painful pathology. Descriptive scheme of the most significant pathologies. Clinical exploration, diagnosis and treatment.

12. Knee painful pathology. Descriptive scheme of the most significant pathologies. Clinical exploration, diagnosis and treatment. Axial deformities of lower limbs.

13. Foot non-traumatic pathology. Descriptive scheme of the most significant pathologies. Clinical exploration, diagnosis and treatment.

14. Intervertebral disc. Cervicalgia. Cervical herniated disc. Syndromes of nervous entrapment of the upper limbs.

15. Shoulder and elbow non-traumatic pathology. Descriptive scheme of the most significant pathologies. Clinical exploration, diagnosis and treatment.

16. Wrist and hand non-traumatic pathology. Descriptive scheme of the most significant pathologies. Clinical exploration, diagnosis and treatment.

17. Lumbago and degenerative pathology of the lumbar rachis. Spinal deformities.



### **3. Theoretical lessons in Medicine of the Locomotor System.**

Topic 1. Autoimmune and systemic arthritis.

Topic 2. Systemic lupus erythematosus. Primary antiphospholipid syndrome.

Topic 3. Systemic sclerosis. Inflammatory myopathies.

Topic 4. Vasculitis, concept, classification and diseases that comprise it.

Topic 5. Multifactorial systemic diseases: Amyloidosis. Sarcoidosis. Autoinflammatory diseases.

Topic 6. Metabolic bone pathology: osteoporosis, osteomalacia and Paget's disease.

### **4. Seminar practices of Traumatology**

S1. Treatment methods in traumatology and orthopedic surgery. Joint interventions. Fracture internal fixation. Other methods of osteoarticular reconstruction.

S2. Pelvis, hip and femur traumas. Pelvis parcelling fractures. Pelvic ring fractures. Cotillo fracture. Femur proximal limb fracture: femoral neck fractures, pertrochanteric fractures, greater and lesser trochanter fractures, subtrochanteric fractures. Femur diaphyseal fractures. Femur proximal limb fractures and femoral diaphysis in the child.

S3. Knee traumas. Muscle lesions of the extensor apparatus. Quadriceps and patellar tendon rupture. Tibia spine avulsion. Patella fractures. Tibia proximal limb fracture. Femur distal limb fracture. Acute ligament lesions.

S4. Tibia, ankle and foot traumas. Tibia fractures. Ankle sprain. Malleolar fractures. Calcaneus fractures. Talus bone fractures. Midtarsal fractures. Metatarsal fractures. Toes fractures.

### **5. Seminar practices of Traumatology (continuous)**

S5. Traumatism of the rachis: general principles of diagnosis and treatment. Fractures, sprains, dislocations of the cervical rachis. Fractures of dorsal rachis. Fractures of the cervical rachis. Fractures of the lumbar rachis. Rachis infections.

S6. Shoulder girdle fractures: collarbone fractures, lesions in the acromioclavicular and sternoclavicular, scapula fractures. Shoulder luxations. Humerus proximal limb fractures. Humerus diaphysis fractures.

S7. Elbow fractures in child: supracondylar, condylar, epitrochlear, olecranon and radius head. Elbow fractures in adult: Humerus head, radius head, coronoid and olecranon fractures. Elbow luxation and fracture-luxation. Forearm fractures. Radius distal limb fractures.

S8. Carpus bones fractures: scaphoid fracture, rest of the bone fractures. Acute instabilities and carpus luxations: semilunate and perilunate luxations. Carpus chronic instabilities. Hand injuries. Hand flexor tendons injuries. Hand extensor apparatus injuries and ruptures. Metacarpal fractures and luxations. Phalanges fractures and luxations.



### 6. Clinical cases of Traumatology

1. Clinical cases of fractures and treatment.
2. Diagnosis and treatment of the osteoarticular infections and bone necrosis.
3. Diagnosis and treatment of the lower limb growth disorders. Disorders in the child's motion. Foot statics disorders.
4. Clinical cases of knee traumatism. Exploration and treatment.

### 7. Seminar Practices in Medicine of the Locomotor System.

1. Patient with joint pathology approach.
2. Differential diagnosis of the inflammatory diseases.
3. Differential diagnosis of the autoimmune systemic diseases.
4. Rheumatic diseases treatment.

### 8. Clinical practices

They will be done in state approved Hospitals.

## WORKLOAD

ACTIVITY	Hours	% To be attended
Seminars	26,00	100
Theory classes	26,00	100
Clinical practice	23,01	100
Study and independent work	35,00	0
Readings supplementary material	25,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	5,00	0
<b>TOTAL</b>	<b>150,01</b>	

## TEACHING METHODOLOGY

The theoretical contact hours will be developed with the teacher's presentation of the most important concepts and the questions that the students ask about their study and preparation of the programmed topics, with the teaching material provided.

In the seminars, the participation of students will be promoted with the knowledge acquired through the study of the teaching material provided, stimulating the student's participation in the discussion.



In the practical classes, the skills corresponding to the clinical activity that the teacher is carrying out will be taught.

For autonomous work, the teaching material and corresponding instructions will be provided in the electronic resource "Virtual Classroom" so that the student can prepare both the theoretical and practical classes and can participate in the discussions.

The gender perspective, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

## EVALUATION

The subject developed by each of the departments, medicine and surgery, will be evaluated independently, with criteria established by each of the departments and with a weighting proportional to the subject developed. **66.6% for the surgical content of the subject and 33.3% for the medical content.** In order to be able to evaluate and obtain the final grade, both parts of the subject must be approved, both the surgical part and the medical part. If only one of both parts is approved, the corresponding grade of the approved part will be saved for future calls.

**Surgical Part (Traumatology and Orthopedic Surgery):** Theoretical evaluation will be 50% of the grade for this part, and the practical evaluation will be the other 50%. It will be carried out through a written test with 36 multiple choice questions from the theoretical part and the seminars (5 options with only one correct), 2 clinical cases with five questions each and 4 images (each with 4 options and only one correct). The multiple choice questions will have 5 possible answers, each correct answer in the test will be 2 points, each correct question in the clinical cases counts for 2 points (total 10 points for each clinical case) and *wrong answers will not be deducted*. Images are valued with 2 points for each correct answer. **The pass will be 50 points.**

**Medical Part (Rheumatology):** Final written exam, multiple choice, on the theoretical syllabus of the subject (50%) and another (50%) on the practical contents. The exam will consist of 50 multiple choice questions, correct questions will have a value of 1 point, *errors will subtract 0.333* and those not answered will have 0 points. **A score of 50% will be required to pass.**

**Once both parts were passed, the final grade was established by weighting 66.6% for the surgical part of the subject and 33.3% for the medical part of the subject.**

Students with a grade higher than 9.5 will be eligible for "Honors" through an oral test in the event that there are more students with that grade than there are allocation possibilities per number of enrolled students.

It is a requirement to access the advance call for this subject that the student has completed all of his or her internship.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.



Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

## REFERENCES

### Basic

- RECURSOS e-Salut:
  - ClinicalKey Student Medicina, Odontologia y Enfermería [ <https://uv-es.libguides.com/RecursosSalut> ]
  - Acces Medicina [ [https://uv-es.libguides.com/Access\\_Medicina](https://uv-es.libguides.com/Access_Medicina) ]
  - Médica Panamericana [ [https://uv-es.libguides.com/Medica\\_Panamericana](https://uv-es.libguides.com/Medica_Panamericana) ]
- Patología quirúrgica del Aparato Locomotor. Texto para el grado de medicina. Gomar, Silvestre, Minguez. Grupo Ferpuser ISBN: 978-84-617-7149-3. 2016
- -Campbell. Cirugía ortopédica 14 edition. Frederick M Azar & James H. Beaty. Fecha de publicación : 09/2022.

### Additional

- Traumatología y ortopedia. José Cordero Ampuero & Enrique Gómez Barrena. Fecha de publicación : 09/2019
- Traumatología y ortopedia. Miembro superior. José Cordero Ampuero & Fernando Marco Martínez. Fecha de publicación : 09/2021.
- Traumatología y ortopedia. Miembro inferior. Andreu Combalia Aleu. Fecha de publicación : 03/2022.
- Traumatología y ortopedia. Raquis y ortopedia infantil. Rafael González Díaz. Fecha de publicación : 10/2022