COURSE PROGRAM

Academic Year: 2024/2025

Identification and characteristics of the course				
Code	501757		ECTS Credits	6
Course name (English)	Locomotor system pathology			
Course name (Spanish)	Patología Aparato Locomotor			
Degree programs	Degree in medicine			
Faculty/School	Faculty of medicine and health sciences			
Semester	6	Type of course	Compulsory	
Module	Human Clinical Training			
Matter	Orthopaedic Surgery and Rheumatology			

Lecturer/s			
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Subject Area	Orthopaedics (4.5 credits) Rheumatology (1.5 credits)
Department	Surgical Medical Therapeutics (Orthopaedics) Biomedical sciences (Rheumatology)
Coordinating Lecturer (If more than one)	Juan Antonio Constantino Cabrera

Competencies*
Basic competencies:
1. CB2 – Students should be able to apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
2. CB3 – Students have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues
General competencies:
3. C.05. – Recognize the limitations and the need to maintain and update their professional competence, giving special importance to the autonomous learning of new knowledge and techniques and the motivation for quality.
4. C.06. – Develop professional practice with respect to other health professionals, acquiring team work skills.
5. C.09. – Understand and recognize the effects, mechanisms and manifestations of the disease on the structure and function of the human body.
6. C.10. – Understand and recognize the causative agents and risk factors that determine the health status and development of the disease.
7. C.11. – Understand and recognize the effects of growth, development and ageing on the individual and his social environment.
8. C.12. – Understand the bases of action, indications and efficacy of therapeutic interventions, based on the available scientific evidence.
9. C.13. – Obtain and prepare a clinical history containing all relevant information
10. C.15. – Have the capacity to make an initial diagnostic assessment and establish a reasoned diagnostic strategy.
11. C.16. – Recognize and deal with situations that put life in immediate danger and others that require immediate attention.
12. C.17. – Establish the diagnosis, prognosis and treatment, applying the principles based on the best possible information and clinical safety conditions
13. C.18. – Indicate the most appropriate therapy for the most prevalent acute and chronic processes, as well as for the terminally ill.
14. C.19. – Propose and propose preventive measures appropriate to each clinical situation.
15. C.28. – Obtain and use epidemiological data and assess trends and risks for health decision- making.

* The sections concerning competencies, course outline, educational activities, teaching methodologies, learning outcomes and assessment systems must conform to that included in the ANECA verified document of the degree program.

Transversal competencies:
16. CT1. – Students have demonstrated a mastery of Information and Communications Technologies (ICT) through the use of tools and processes that imply their application to the scientific methodology or the practical application of medicine.
17. CT2. – Students have been able to develop the profile for professional practice in medicine through activities designed in all subjects of the curriculum.
Specific competencies:
18. CEM3.01.1. - Recognize, diagnose and guide the management of the main pathologies of the locomotor system.
19. CEM3.02. - Know how to make a complete anamnesis, focused on the patient and oriented to the various pathologies, interpreting its meaning. Knowing how to make a physical exploration by systems, as well as a psychopathological exploration, interpreting their meaning.
20. CEM4.01. - Assess the risk/benefit ratio of diagnostic and therapeutic procedures
21. CEM4.10. - Radiological Image
22. CEM4.12. - Know other diagnostic imaging techniques.
23. CEM4.13. - Evaluate the indications and contraindications of the radiological studies.
24. CEM4.24. - Know the general surgical indications, the preoperative risk and the postoperative complications
25. CEM4.31. - Know how to interpret a radiological image by means of systematic reading.
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Contents
Course outline*
Study of the pathologies that affect the most prevalent Acute and Chronic musculoskeletal system: Pathophysiology, Diagnosis and Medical-Surgical Treatments. Care of the Geriatric Patient and the Terminally Ill. Education for health.
Course syllabus
Orthopaedic
Title of unit 1: CLINICAL HISTORY, EXPLORATION AND TREATMENT OF THE PATHOLOGY OF THE LOCOMOTOR SYSTEM. Contents of unit 1: Anamnesis, clinical examination, radiological examination, non-surgical treatments, surgical treatments. Description of practical activities for unit 1: not available
Title of unit 2: ETIOLOGY AND MECHANISM OF FRACTURE PRODUCTION. CLINICAL. PHYSEAL FRACTURES. FRACTURE REPAIR PROCESS. Contents of unit 2: Etiology, general mechanism, Symptoms, diagnosis, consolidation process, fractures in the child. Physeal fractures. Description of practical activities for unit 2: not available

Title of unit 3: GENERAL TREATMENT OF FRACTURES. NON-SURGICAL. SURGICAL. PATHOLOGY OF THE FRACTURE CALLUS. PATHOLOGICAL FRACTURES Contents of unit 3 Non-surgical treatment, surgical treatment, open fractures, pathological fractures, complications of the fracture callus. Description of practical activities for unit 3: not available
Title of unit 4: BONE AND JOINT INFECTIONS Contents of unit 4: Osteomyelitis, septic arthritis. spondylitis. implant infections. Description of practical activities for unit 4: not available
Title of unit 5: MUSCULOSKELETAL TUMORS Contents of unit 5: Diagnostic approach, primary, metastatic bone tumors and soft tissue mass. Description of practical activities for unit 5: not available
Title of unit 6: OSTEONECROSIS. OSTEOCHONDROSIS. OSTEOCHONDRITIS DISSECANS. Contents of unit 6: Osteonecrosis etiology, classification and treatment; Frieberg, Köhler, Sever and Osgood-Schlatter diseases; osteochondritis disecante. Description of practical activities for unit 6: not available
Title of unit 7: SURGICAL PATHOLOGY OF MUSCLES AND TENDONS Contents of unit 7: Musculotendinous physiopathology. Muscular and tendon injuries. muscle diseases, tendinosis and bursitis. Description of practical activities for unit 7: not available
Title of unit 8: PERIPHERAL NERVE INJURIES. SYMPATHETIC-REFLEX DYSTROPHIES Contents of unit 8: Injury mechanisms, physiopathology, classification, symptomatology and exploration and management; reflex sympathetic dystrophy. Description of practical activities for unit 8: not available
Title of unit 9: INJURIES OF SPINE. SPINAL CORD INJURIES Contents of unit 9: Injury mechanisms, classification, diagnosis and treatment. Description of practical activities for unit 9: not available
Title of unit 10: SPINAL DEFORMITIES. SPONDYLOLISTHESIS Contents of unit 10: Idiopathic and degenerative scoliosis, kyphosis, Spondylolisthesis Description of practical activities for unit 10: Seminars of Spine and Pediatric Orthopaedics Description of practical activities for unit 11: not available.
Title of unit 12: UPPER LIMB INJURIES I Contents of unit 12: Injuries of the shoulder and upper-limb. Glenohumeral instability Description of practical activities for unit 12: not available.
Title of unit 13: NON TRAUMATIC SHOULDER PATHOLOGY. Contents of unit 13: Rotator cuff injuries and subacromial syndrome, frozen shoulder, calcifying tendinitis. Description of practical activities for unit 13: not available.
Title of unit 14: UPPER LIMB INJURIES II Contents of unit 14: Injuries of the elbow, forearm, wrist and hand. Description of practical activities for unit 14: not available.
Title of unit 15: KIEMBOCK'S DISEASE AND OTHER DISEASES OF THE UPPER LIMB Contents of unit 15: Kienböck's disease. De quervain`s disease. epicondylosis . tenosynovitis. Dupuytren's disease. Description of practical activities for unit 15: not available.
Title of unit 16: LOWER LIMB INJURIES I Contents of unit 16: Injuries of the pelvis, hip and femur. Description of practical activities for unit 16: not available.
Title of unit 17: PAINFUL HIP OF THE ADULT Contents of unit 17: Anamnesis, clinical examination, osteoarthritis, avascular necrosis .femoroacetabular impingement. Description of practical activities for unit 17: not available.

Title of unit 18: DEVELOPMENTAL DYSPLASIA OF THE HIP Contents of unit 18: Pathophysiology, Diagnosis, Management and treatment. Description of practical activities for unit 18: not available.
Title of unit 19: HIP PATHOLOGY IN THE CHILD AND ADOLESCENT Contents of unit 19: Legg->Calvé-Perthes disease, slipped capital femoral epiphysis, irritable hip (transient synovitis). Description of practical activities for unit 19: not available.
Title of unit 20: LOWER LIMB INJURIES II Contents of unit 20: Injuries of the knee, leg, ankle and foot. Description of practical activities for unit 20: not available.
Title of unit 21: PAINFUL KNEE Contents of unit 21: Anamnesis and clinical examination. Osteoarthritis, osteonecrosis, osteochondritis dissecans. Injuries of extensor apparatus. Description of practical activities for unit 21: not available.
Title of unit 22: INJURIES OF THE LIGAMENTS AND MENISCUS OF THE KNEE. Contents of unit 22: Etiology, classification, diagnosis and treatment. Description of practical activities for unit 22: not available.
Title of unit 23: ANGULAR AND ROTATIONAL DEFORMITIES OF LOWER LIMBS Contents of unit 23: Knee varus. Blount Disease, valgus knee, Intoeing, Out-toeing Description of practical activities for unit 23: not available.
Title of unit 24: DEFORMITIES OF THE FOOT Contents of unit 24: Clubfoot (Congenital Talipes Equinovarus), flatfoot, cavus Foot Description of practical activities for unit 24: not available.
Title of unit 25: PAINFUL FOOT Contents of unit 25: Metatarsalgia. Inferior heel pain. Hallux valgus, Deformities of lesser toes. Ingrown toenail. Diabetic foot. Description of practical activities for unit 25: not available
Seminars: 1.Rachis, Bandages and plasters 2.Lower limb 3.Child Traumatology and Upper Limb 4.Bone injuries 5.Global Seminar
Rheumatology
Title of unit 1: GENERAL CHARACTERISTICS AND CLASSIFICATION OF RHEUMATIC DISEASES
Title of unit 2: OSTEOPOROSIS
Title of unit 3: SERONEGATIVE SPONDYLOARTHRITIS. ANKYLOSING SPONDYLITIS. PSORIATIC ARTHRITIS
Title of unit 4: RHEUMATOID ARTHRITIS. ADULT STILL'S DISEASE
Title of unit 5: DISSEMINATED LUPUS ERYTHEMATOSUS
Title of unit 6: POLYMYOSITIS, DERMATOMYOSITIS AND SJÖGREN'S SYNDROME
Title of unit 7: SYSTEMIC SCLEROSIS AND CREST SYNDROME
Title of unit 8: VASCULITIS AND ANTIPHOSPHOLIPID SYNDROME
Title of unit 9: OSTEOARTHRITIS, PAGET'S DISEASE, FIBROMYALGIA

Title of unit 10: GOUT AND DISEASE BY DEPOSITION OF PYROPHOSPHATE-CALCIUM- DEHYDRATED CRYSTALS)
Title of unit 11: BONE AND JOINT INFECTIONS
CLINICAL PRACTICES AND SEMINARS:
1. CLINICAL CASES IN RHEUMATOLOGY.
2. THERAPIES IN RHEUMATOLOGICAL PATHOLOGY.

Educational activities *

Orthopaedic

Student workload in hours by lesson		Lectures	Practical activities				Monitoring activity	Homework
Lesson	**Total**	**L**	**HI**	**LAB**	**COM**	**SEM**	**SGT**	**PS**
1	4	2						2
2	4	1						3
3	3	1						2
4	3	1						2
5	6	2						4
6	3	1						2
7	3	1						2
8	3	1						2
9	6	2						4
10	5	2						3
11	3	1						2
12	4	1						3
13	4	1						3
14	3	1						3
15	3	1						2
16	4	1						3
17	3	1						2
18	3	1						2
19	4	1						3
20	4	2						2
21	4	1						3
22	3	1						2
23	4	2						2
24	4	2						2
25	4	1						3
Seminar 1	3					2		1
Seminar 1	3					2		1
Seminar 1	3					2		1
Seminar 1	3					2		1
Seminar 1	4					2.5		1.5
Assessment **	2.5	2				0.5		
Subtotal	112.5	34				11		67.5
Rheumatology								
1	1.5	0.5						1
2	3	1						2
3	3	1						2
1	1.5	0.5						1
5	3	1						2

** Indicate the total number of evaluation hours of this subject.

6	3	1						2
7	3	1						2
8	3	1						2
9	3	1						2
10	3	1						2
11	2	1						1
Clinical practice	3					1.5		1.5
Seminar	3		2					1
Assessment**	1	0.5				0,5		
Subtotal	37.5	11	2			2		22.5
TOTAL	150	45	2			13		90

L: Lectures (85 students)
HI: Hospital internships (7 students)
LAB: Laboratory or field practices (15 students)
COM: Computer room or language laboratory practices (20 students)
SEM: Problem classes or seminars or case studies (40 students)
SGT: Scheduled group tutorials (educational monitoring, ECTS type tutorials)
PS: Personal study, individual or group work and reading of bibliography

Teaching Methodologies*

1. Lectures and participatory classes. Classroom training activities for the entire group. procedures and applications relating to various topics. The concepts and procedures will be presented in the classroom, using audiovisual media (video projector presentations.
2. Seminars/workshops.
3. Virtual campus.
4. Assessment: the different types of evaluation are described in the section assessment methods.

Following the guidelines of the PALEX-Intermedio program, the following topics will be taught in Spanish and English:

- Global seminar
- Seminars Bone tumor - Systematic approach and Differential diagnosis.
- Unit 10: SPINAL DEFORMITIES. SPONDYLOLISTHESIS
- Unit 19: HIP PATHOLOGY IN THE CHILD AND ADOLESCENT
- Unit 24: DEFORMITIES OF THE FOOT

** Indicate the total number of evaluation hours of this subject.

Learning outcomes *

The student should:

- know basic etiopathogenic aspects involved in the biopathological kinetics of the "lesion" (genesis, evolution, transformation -regression and progression- , repercussion and expression in phenotype-clinical).
- Learn the doctor's role and attitude towards diagnostic imaging techniques and their inclusion in multidisciplinary processes.
- Know the main indications of each radiological technique.
- Apply clinical-pathological reasoning in general and in particular to differential diagnosis, which provides a solid basis for clinical practice.
- Describe the most common pathology.
- Acquire an overview of the clinical problem and the importance of differential diagnosis.

Assessment systems *

At the beginning of the course, the student must choose either the continuous evaluation of the subject or the final evaluation by means of a single written test. The choice between the continuous evaluation system or the evaluation system with a single global final test corresponds to the student during the first three weeks of each semester. The student will inform the teacher in writing of the type of assessment chosen (continuous assessment or global test) in the first three weeks of the semester. When a student does not make this communication, it will be understood that he opts for continuous assessment.

Orthopaedics

Continuous evaluation:

Attendance , active participation and discussion of the different activities in clases and seminars throughout the course will be taken in account. Attendance at seminars is compulsory.

The evaluation will consist of two parts, a theoretical part, on issues related to the contents of the programme, with an assessment of 80 % of the total score of the examination, and a practical or problem- solving part, the value of which will be 20 % of the total score of the examination.

The evaluation of the subject will be carried out by means of a multiple choice question examination with 30 theoretical and 10 practical questions . In order to pass the exam, the student must obtain a minimum score in each of the two parts, 5 out of 10 points in the theoretical part (3 wrong answer will invalidate a correct answer) and 6 out of 10 in the practical part (wrong answer do not penalize).

Overall evaluation by means of a single test without continuous evaluation:

If the student chooses this option this examination will consist of Three parts, a theoretical part (30 question) with an assessment of 70 % of the total score of the examination, a practical or problem solving part (10 question), the value of which will be 20 % of the total score of the examination. And finally 10 question on issues

related to the contents of the seminars, the value of this last part will be 10 % of the total score of the examination.

Rheumatology

Continuous evaluation:

Attendance at seminars and practical classes are compulsory. Students who miss 50% (1 of 2 hours) without due justification will no longer be able to benefit from the continuous evaluation system. In order to attend to practical classes, it will be essential for the student to wear a gown and a stethoscope.

The evaluation will consist of two parts, a theoretical part, on issues related to the contents of the programme, with an assessment of 80 % of the total score of the examination, and a practical or problem- solving part, the value of which will be 20 % of the total score of the examination

The evaluation of the subject will be carried out by means of a multiple choice question examination with 20 theoretical and 5 practical questions . In order to pass the exam, the student must obtain a minimum score in each of the two parts, 5 out of 10 points in the theoretical part (4 wrong answer will invalidate a correct answer) and 6 out of 10 in the practical part (wrong answer do not penalize).

Overall evaluation by means of a single test without continuous evaluation:

If the student chooses this option this examination will consist of Three parts, a theoretical part (20 question) with an assessment of 70 % of the total score of the examination, a practical or problem solving part (5 question), the value of which will be 20 % of the total score of the examination. And finally 2 question on issues related to the contents of the seminars, the value of this last part will be 10 % of the total score of the examination.

Global assessment of the subject

The subject is passed or failed in its entirety. If one of the 2 parts of the subject (Orthopaedic or Rheumatology) is failed the final global qualification will be that of the failed subject.

-A student who passes one part of the subject and fails the other part, the qualification of the passed part will be kept in the two extraordinary examinations of the same academic year.

-If the 2 parts of the subject are faliled the final grade will result from the weighted average grade score of both parts of the subject (taking into account the equivalence 75% Orthopaedic and 25% Rheumatology)

- If the 2 parts of the subject are passed the final grade will result from the weighted average grade score of both parts of the subject (taking into account the equivalence 75% Orthopaedic and 25% Rheumatology)

Bibliography (basic and complementary)

Orthopaedics

1. Ortopedia, Traumatologia y Reumatologia, Duckworth, A. - Porter, D. - Ralston, 2017 S.Elsevier
2. Essential Orthopaedics, Mark D. Miller,2020 Elsevier Saunders.
3. Ortopedia y Traumatología. M.D. Miller. 5ª Edición . Elsevier Saunders.
4. Manual SECOT de Cirugía Ortopédica y Traumatología. Panamericana.
5. Ortopedia y Fracturas. McRae. 2017 .Marban.
6. Traumatología y ortopedia para el grado en Medicina, Fernando marco Martínez. 2º edicion 2022. Elsevier

Rheumatology

1. Cecil .Tratado de Medicina Intema. 23a edición, 2009. Editorial Elsevier.
2. Farreras.Medicina Intema. 16a edición, 2008. Editorial Elsevier.
3. Harrison .Tratado de Medicina Interna. 18a edición, 2011. Editorial McGraw-Hill.
4. Raftery y Cols.Diagnóstico Diferencial. 3a edición, 2011. Editorial Elsevier.
5. Laso, FJ. Diagnóstico Diferencial en Medicina Interna. 2a edición, 2004. Editorial Elsevier.
6. Friedrnan, H. Manual de Diagnóstico Médico. 5a edición, 2004. Editorial Elsevier.
7. Young A, Huizinga T.Reumatología Clínica. 1a Edición, 2010. Editorial Elsevier.

Duró JC. Reumatología Clínica. 1a Edición, 2010. Editorial Elsevier.

Other resources and complementary educational materials

Online courses:
https://www.coursera.org/learn/trauma-surgery-basics?irclickid=TuiRuazSExyKWAXxghRi4XjgUkC0RX0T1SoyWs0&irgwc=1&utm_medium=partners&utm_source=impact&utm_campaign=259799&utm_content=b2c.

Web pages:
https://www.orthobullets.com/

podcast:
https://www.buzzsprout.com/325448

YouTube Channels:
https://www.youtube.com/c/OrthopedicPrinciple/videos