**ASIGNATURA DE ANATOMÍA Y FISIOLOGÍA HUMANA II**

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| 1. **Competences** | To integrate the therapeutic treatment through inicial assessment, planning, execution, and evaluation of physical therapy techniques to the improvement of life quality of the client/patient. |
| 1. **Four-month term** | Second |
| 1. **Theory hours** | 75 |
| 1. **Practice hours** | 45 |
| 1. **Total hours** | 120 |
| 1. **Total hours per week in term** | 8 |
| 1. **Learning Objective** | The students will match the anatomic structures with physiological processes corresponding to the skeletal, muscle, and joint systems considering the structural components and their motor function to examine the clinical functional state of the client/patient. |

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| **Learning Units** | **Hours** | | |
| **Theory** | **Practice** | **Totals** |
| **I. Sistema Esquelético.** | 25 | 15 | 40 |
| **II. Sistema Articular.** | 20 | 10 | 30 |
| **III. Sistema Musculoesquelético.** | 30 | 20 | 50 |
| **Totals** | **75** | **45** | **120** |

**ANATOMÍA Y FISIOLOGÍA HUMANA II**

*LEARNING UNITS*

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| **1. Learning Unit** | **I. Sistema Esquelético.** |
| **2. Theory hours** | 25 |
| **3. Practice hours** | 15 |
| **4. Total hours** | 40 |
| **5. Objective of the Learning Unit** | The students will integrate the anatomy and physiology of the skeletal system to explain its functioning and to identify alterations. |

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| **Topics** | **Know** | **Know how** | **Be** |
| Organisation, structure, and functions of the human skeleton. | To describe the six main functions of the skeletal system.  To describe the organisation of the skeletal system:  - Axial skeleton.  - Apendicular sekelton.  To identify the bones according to the classification based on their structure.  To describe the structure and function of every single part of a large bone.  To describe the main bone surface landmarks and their functions. | To locate the bone structures according to the organisation of the skeletal system.  To contrast the functions of the axial skeleton and the apendicular skeleton.  To differenciate the bones according to the classification based on their structure.  To explain the structural and functional implications from a damage or wound in different parts of a bone.  To locate the main bone landmarks through palpation. | Analitical  Systematic  Organised  Observer  Objective |
| Bone tissue and growth. | To describe the characteristics and location of compact bone tissue and spongy bone tissue.  To describe the cell composition of bone tissue and the functions of each type of cell.  To describe the generalities of irrigation and innervation of the bone.  To describe the processes related to bone growth:  - Elongation.  - Diameter increase.  - Remodelation.  - Affecting factors (vitamins, minerals, and hormones). | To compare the structural and functional differences that occure between the compact bone tissue and the spongy bone tissue.  To compare the specific functions of bone cells.  To explain the way that physical activity, mechanical tension, and aging affect the bone tissue. | Analitical  Systematic  Organised  Observer  Objective |
| Axial skeleton. | To name and locate skull bones and facial bones.  To identify the location and reparis of head bones.  To identify the regions and normal curves of the spine.  To describe the structural and functional characteristics of the bones of different regiones of the spine.  To identify the location and surface characteristics of the spine.  To identify and locate the torax bones.  To identify the location and surface characteristics of the torax. | To match the skull and facial bones based on their structure and function.  To palpate the major bony landmarks of the head bones.  To compare the vertebrae of the regions of the spine based on their structure and function.  To palpate the main bony landmarks of the bones of the spine.  To match the torax bones based on their structure and function.  To palpate the main bony landmarks of the bones of the torax. | Analitical  Systematic  Organised  Observer  Objective |
| Apendicular skeleton. | To identify the bones of the scapular waist (shoulder), their structure and their functions.  To identify the main anatomical landmarks of the scapular waist.  To identify the bones of the upper extremity, their structure and their function:  - Humerus.  - Radius and ulna.  - Carpus.  - Metacarpus.  - Phalanges.  To identify the main anatomical landmarks of the upper extremity.  To identify the bones of the pelvic waist, their structure and their functions.  To identify the main anatomical landmarks of the pelvic waist.  To identify the bones of the lower extremity, their structure and their functions:  - Femur.  - Tibia and fibula.  - Tarsus.  - Metatarsus.  - Phalanges.  To identify the main anatomical landmarks of the lower extremity. | To match the bones of the scapular waist based on their structure and function.  To palpate the main bony landmarks of the scapular waist.  To match the bones of the upper extremity based on their structure and function.  To palpate the main bony landmarks of the upper extremity.  To match the bones of the pelvic waist based on their structure and function.  To palpate the main bony landmarks of the pelvic wasit.  To match the bones of the lower extremity based on their structure and function.  To palpate the main bony landmarks of the lower extrimity. | Analitical  Systematic  Organised  Observer  Objective |

**ANATOMÍA Y FISIOLOGÍA HUMANA lI**

*EVALUATION PROCESS*

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| **Learning Result** | **Learning Sequence** | **Instrumens and types of evaluation** |
| The students will hand in:  1) A portfolio of evidences that includes:  -A graphic organiser about the functions and organisation of the skeletal system, the structural classification of the bone, parts of the bone, and the types of bony landmarks.  -Digital graphic resources about the processes realted to bone growth and bony histological composition.  2) Practice O.S.C.E. (Objective Structural Clinical Examination):  -Locate “x” bone structure.  -To classify the bone by its structure and location.  -To describe the bone structure.  -To match the bone with nearby structures.  -To palpate surface landmarks. | 1. To comprehend the organisation of the skeletal system and bone classification.  2. To describe cell composition and bone tissues.  3. To analyse the processes related with bone growth.  4. To match the bone structures of the axial and apendicular skeletons. | Rubric.  Observation guides. |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*TEACHING LEARNING PROCESS*

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| **Teaching methods and techniques** | **Didactic means and materials** |
| Investigation tasks.  Guided discussion.  Master class.  Brainstorm.  Graphic organisers.  Body Paint. | Whiteboard.  Audiovisual equipment.  Internet connection.  Slides.  Schemes.  Anatomic models.  3D anatomy software. |

*FORMATION SPACE*

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| **Classroom** | **Laboratory / Workshop** | **Company** |
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**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*LEARNING UNITS*

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| **1. Learning Unit** | **Il. Sistema Articular.** |
| **2. Theory hours** | 20 |
| **3. Practice hours** | 10 |
| **4. Total hours** | 30 |
| **5. Objective of the Learning Unit** | The students will integrate the anatomy and physiology of the joint system to explain its operation and to identify alterations. |

| **Topics** | **Know** | **Know how** | **Be** |
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| Joint classification. | To describe the structural and functional classifications of joints.  To describe the structure of the three types of fibrous joints:  - Sutures.  - Syndesmosis.  - Interosseous membranes.  To describe the structure of the two types of cartilaginous joints:  - Synchondrosis.  - Symphysis.  To describe the general structure of synovial joints and their subtypes:  - Arthrodia.  - Ginglimus.  - Trochoid.  - Condylea joint.  - Saddle joint.  - Ball-and-socket joint. | To match the structure of the fibrous joints with their function.  To match the structure of the cartilaginous joints with their function.  To match the structure of synovial joints with their function.  To compare the subtypes of synovial joints with their movements. | Analitical  Systematic  Organised  Observer  Objective |
| Specific head and trunk joints. | Reconocer la planimetría articular. To recognise joint planimetry.  To describe the anatomical components of the main head and trunk joints:  - Temporomandibular joint  (ATM).  - Atlanto-occipital and atlus-axial joint.  - Intervertebral joints.  - Acromioclavicular and sternoclavicular joints. | To match the head and trunk joints with the movements they make.  To palpate the joint landmarks of head and trunk joints. | Analitical  Systematic  Organised  Observer  Objective |
| Specific upper extremity joints. | To describe the anatomical components of the upper extrimity joints:  - Shoulder.  - Elbow.  - Wrist.  - Trapezius-metacarpal joint. | To match the upper extrimity joints with the movements they make.  To palpate the joint landmarks of the upper extremity joints. | Analitical  Systematic  Organised  Observer  Objective |
| Specific lower extremity joints. | To describe the anatomical components of lower extrimity joints:  - Hip.  - Knee.  - Talocrural joint. | To match the lower extremity joints with the movements they make.  To palpate the joint landmarks of the lower extremity joints. | Analitical  Systematic  Organised  Observer  Objective |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*EVALUATION PROCESS*

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| **Learning Result** | **Learning Sequence** | **Instruments and types of evaluation** |
| In collaborative teams, the students will hand in:  1) A portfolio of evidences that includes:  -A comparative chart of structural and functional classification of joints.  -To present an anatomic-mechanig prototype of the different joint structures.    2) Practice O.S.C.E. (Objective Structural Clinical Examination):  -To locate “x” joint structure.  -To classify joint components.  -To describe joint components.  -To palpate surface landmarks.  -To simulate joint movements according to body planimetry. | 1. To comprehend the functional and structural classification of the joint system.  2. To describe the anatomical components of the main joints of the human body.  3. To match joint movements with anatomical planimetry. | Rubric.  Observation guide. |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*TEACHING LEARNING PROCESS*

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| **Teaching methods and techniques** | **Didactic means and materials** |
| Investigation tasks.  Guided discussion.  Master class.  Brainstorm.  Graphic organisers.  Body Paint. | Whiteboard.  Audiovisual equipment.  Internet connection.  Slides.  Schemes.  Anatomical models.  3D anatomy software. |

*FORMATION SPACE*

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| **Classroom** | **Laboratory / Workshop** | **Company** |
| X | X |  |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*LEARNING UNITS*

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| --- | --- |
| **1. Learning Unit** | **Ill. Sistema Musculoesquelético.** |
| **2. Theory hours** | 30 |
| **3. Practice hours** | 20 |
| **4. Total hours** | 50 |
| **5. Objective of the Learning Unit** | The students will integrate the anatomy and physiology of the musculoskeletal system to explain its operation and to identify alterations. |

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| **Topics** | **Know** | **Know how** | **Be** |
| Principles of musculoskeletal anatomy and physiology. | To list the types of muscle tissue:  To describe the histology of a musculoskeletal fiber.  To identify the reactions by which muscle fibers produce ATP.  To distinguish between anaerobic and aerobic cell respiration.  To identify the factors that lead to muscle fatigue.  To describe the structure and function of a motor unit.  To describe the effects of exercise over the different types of musculoskeletal fibers. | To explain the structural differences among the three types of muscle tissue.  To compare the structure and function of the three types of musculoskeletal fibers.  To explain how action potentials arise in neuromuscular union.  To explain the phases of a sudden contraction.  To explain how muscle tone is generated.  To distinguish isotonic and isometric contractions. | Analitical  Systematic  Organised  Observer  Objective |
| Head and trunk skeletal muscles. | To describe the origin, insertion, action, and innervation of facial expression muscles.  To describe the origin, insertion, action, and innervation of the muscles that move the jaw involved in chewing and speaking.  To describe the origin, insertion, action, and innervation of the muscles that move the head.  To describe the origin, insertion, action, and innervation of the muscles that move the spine.  To describe the origin, insertion, action, and innervation of the pelvic floor muscles. | To palpate the facial expression muscles.  To simulate the movements of the facial expression muscles.  To palpate the muscles that move the jaw.  To simulate the movements of the muscles of the jaw.  To palpate the muscles that move the head.    To simulate the movements of the muscles that move the head indicating the agonist and antagonist muscles.  To palpate the muscles that move the spine.  To simulate the movements of the spine muscles indicating the agonist and antagonist muscles.  To simulate the muscle contraction of the pelvic floor muscles. | Analitical  Systematic  Organised  Observer  Objective |
| Upper extrimity skeletal muscles. | To describe the origin, insertion, action, and innervation of the muscles that move the scapular waist and the shoulder.  To describe the origin, insertion, action, and innervation of the muscles that move the elbow and the proximal and distal radioulnar joints.  To describe the origin, insertion, action, and innervation of the muscles of the forearm that move the wrist and the hand and fingers joints.  To describe the origin, insertion, action, and innervation of the palm of the hand muscles that move the fingers (intrinsic hand muscles). | To palpate the muscles that move the scapular waist and the shoulder.  To simulate the muscles of the scapular waist and the shoulder indicating the agonist and antagonist muscles.  To palpate the muscles that move the elbow and the proximal and distal radioulnar joints.  To simulate the movements of the muscles of the elbow and the proximal and distal radioulnar joints indicating the agonist and antagonist muscles.  To palpate the muscles of the forearm that move the wrist and the hand and fingers joints.  To simulate the movements of the wrist, hand, and fingers indicating the agonist and antagonist muscles.  To palpate the intrinsic muscles of the hand.  To simulate the intrinsic movements of the hand indicating the agonist and antagonist muscles. | Analitical  Systematic  Organised  Observer  Objective |
| Lower extremity skeletal muscles. | To describe the origin, insertion, action, and innervation of the glute muscles that move the femur.  To describe the origin, insertion, action, and innervation of the muscles of the thigh that mive the femur, the tibia, and the fibula.  To describe the origin, insertion, action, and innervation of the muscles of the leg that move the foot and the toes.  To describe the origin, insertion, action, and innervation of the intrinsic muscles of the foot that move the toes. | To palpate the glute muscles that move the femur.  To simulate the movements of the femur indicating the agonist and antagonist muscles.  To palpate the muscles of the thigh that move the femur, the tibia, and the fibula.  To simulate the movements of the thigh indicating the agonist and antagonist muscles.  To palpate the musles of the leg that move the foot and the toes.  To simulate the movements of the foot and toes indicating the agonist and antagonist muscles.  To palpate the intrinsic muscles of the foot that move the toes.  To simulate the movements of the toes indicating the agonist and antagonist muscles. | Analitical  Systematic  Organised  Observer  Objective |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*PROCESO DE EVALUACIÓN*

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| **Learning Result** | **Learning Sequence** | **Instruments and types of evaluation** |
| In collaborative teams, the students will hand in:  1) A portfolio that includes:  -A graphic organiser about the structural and functional characteristics of the musculoskeletal tissue.  -Digital graphic resources about the production processes of ATP, anaerobic and aerobic respiration, muscle fatigue, sudden contraction, and effects of exercise over the different types of musculoskeletal fibers.  -Mind map about the structure and function of the motor unit.  2) Practice OSCE:  Starting from an example of basic functional activity (sitting and standing), the students will indicate the following:  -Agonist and antagonist muscles.  -Origin, insertion and innervation.  -Action (movement that makes). | 1. To identify the anatomy and physiology of the musculoskeletal system.    2. To comprehend the ATP production processes, anaerobic and aerobic respiration, muscle fatigue, sudden contraction, types of muscle contractions.    3. To comprehend the effects of exercise over the different types of musculoskeletal fibers.  4. To match the musculoskeletal system with the osseous system and the joint system. | Practice exercises.  Observation guides. |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*TEACHING LEARNING PROCESS*

|  |  |
| --- | --- |
| **Teaching methods and techniques** | **Didactic means and materials** |
| Investigation tasks.  Guided discussion.  Master class.  Brainstorm.  Graphic organisers.  Body Paint. | Whiteboard.  Audiovisual equipment.  Internet connection.  Slides.  Schemes.  Anatomic models.  3D anatomy software. |

*FORMATION SPACE*

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| **Classroom** | **Laboratory / Workshop** | **Company** |
| X | X |  |

**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*CAPACITIES DERIVED FROM THE PROFESSIONAL COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES*

| **Capacity** | **Performance Criteria** |
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| To assess the physical condition of the customer/patient through the diagnostic interpretation and applying techniques of physical exploration and clinic interview to establish the treatment plan. | To write a report of therapeutic assesment, which will be added to the therapeutic record, that includes:   * Specialist who canalises * Informed consentment * Personal information * Current ailment * Clinic history * Physical and therapeutic assessment |
| To determine the therapeutic treatment through selection and programming of therapeutic techniques, area, equipment, work material, human resource, and calendarisation, to contribute to the evolution of the health condition of the client/patient and their wellbeing. | To create a treatment protocol, which will be added to the therapeutic record, that includes:  - Chronogram of sessions per treatment.  - Place or workplace.  - Techniques used.  - Therapeutic counterinstructions.  - Risks and complications.  - List of material and equipment to use according to the applicable norm.  - Projection of the evolution of the client/patient.  - Therapist in charge and their speciality. |
| To develop the therapeutic treatment through manual therapies and electrotherapy to contribute on the rehabilitation, health condition and wellbeing of the client/client. | To perform the manual techniques and electrotherapy according to the protocol established: facilities, equipment and goods to use, times, temperature; instructions, counterinstructions, and benefits to the client/patient.  To track the application of the treatment, which will be added to the therapeutic record, that includes:  • Date, time and session number.  • Treatment specifying the manual techniques and electrotherapy used.  • Advances of the treatment.  • Observations.  • Reaction or affectation.  • Suggestions of tracking and medical reassessment.  • Therapist in charge and their speciality. |
| To assess the evolution and satisfaction of the client/client through analysis of results to propose modifications to the treatment and to contribute to the fullfilment of its objectives. | To write a report of results, which will be added to the therapeutic record, that includes:   * Fullfilment of activities programmed. * Equipment used. * Techniques used. * Fullfilment of hygiene and security norms. * Degree of evolution of the customer/patient. * Degree of satisfaction of the customer/patient. * Conclusions to the treatment. * Observations and modifications proposal to the treatment. |

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**ANATOMÍA Y FISIOLOGÍA HUMANA Il**

*BIBLIOGRAPHIC SOURCES*

| **Author** | **Year** | **Title of Document** | **City** | **Country** | **Editorial** |
| --- | --- | --- | --- | --- | --- |
| Elaine N. Marieb | 2017 | Anatomía y Fisiología Humana. | Madrid | España | PEARSON EDUCACIÓN S.A |
| John E. Hall | 2021 | Tratado de fisiología Médica. | Distrito Federal | México | Elsevier |
| Keith L. Moore | 2018 | Anatomía con orientación clínica | Madrid | España | LWW; Edición Eighth |
| Murloney E. susan | 2016 | Netter. Fundamentos de Fisiología. | Distrito Federal | México | Elsevier |
| Tortora Gerard J. & Derrickson. Bryan | 2021 | Principios de Anatomía y Fisiología Humana. | Distrito Federal | México | Médica Panamericana |