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| --- | --- |
| **Course Title:** | Musculoskeletal system |
| **Course Code:** | **372 MSS-6** |
| **Program:** | Bachelor of Medicine and Bachelor of Surgery (MBBS) |
| **Department:** | N/A |
| **College:** | Medicine |
| **Institution:** | Najran University |

# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours: 6 (4+2 )** | | | | | | |  | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | College | | | |  | Department | | |  | Others: (program) | **√** |  | |
| **b.** | | Required | | | **√** | Elective | | | |  |  | | | | | |
| **3. Level/year at which this course is offered: Year 3 -Semester – 1 (level 7)** | | | | | | | | | | | | | | | |  |
| **4. Pre-requisites for this course** (if any)**:**  **Phase I blocks** | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**: None** | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage** |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 81 | 55.86% |
| **2** | **Blended** |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Distance learning** |  |  |
| **5** | **Other** | 64 | 44.14% |

**7. Contact Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Contact Hours** |
| **1** | **Lecture** | 41 |
| **2** | **Laboratory/ Dissection Room (DR)** | 52 |
| **3** | **Tutorial** |  |
| **4** | **Others** (specify) |  |
|  | **Problem-Based Learning (PBL)** | 24 |
|  | **Team-Based Learning (TBL)** | 10 |
|  | **Self-Directed Learning (SDL)(T)** | 6 |
|  | **Self-Directed Learning (SDL)(P)** | 3 |
|  | **Bedside teaching (BST)** | 6 |
|  | **Skill Lab (SL)** | 3 |
|  | **Total** | 145 |

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# B. Course Objectives and Learning Outcomes

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| This course is delivered to the medical students at the level five/3rd year. It has been designed to achieve horizontal and vertical integration of musculoskeletal system structures, functions, its common relevant disorders, and their diagnosis and management. The students are expected to develop a problem-solving approach to the relevant musculoskeletal system disorders, their diagnoses, non- pharmacological and pharmacological management. |
| 2. Course Main Objective **By the end of this course, the students are expected to:**  1) **Relate** the structure to functions of the musculoskeletal system.  2) **Interpret** the symptoms and signs of most common diseases, injuries and disturbances.  3) **Discuss** the pathogenesis of various musculoskeletal system diseases presentation, investigations (laboratory, radiological, etc.), and management.  4) **Apply** a problem-solving approach to the musculoskeletal system disorders.  5) **Examine** clinically patients with musculoskeletal system disorders. |

# C. Course Content

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| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Introduction to the Block | - |
| 2 | **WK 1 : PBL -1** | 2 |
| 3 | Development of the limb buds (Ana.) (Lect) | 1 |
| 4 | Bones of the upper limbs (DR) (Ana) | 2 |
| 5 | Pectoral and shoulder regions; shoulder joint & muscles connecting upper limb to the axial skeleton (DR) (Ana.) | 2 |
| 6 | Excitability & Strength duration Curve (phys) (Lect) | 1 |
| 7 | Axilla (DR) (Ana.) | 2 |
| 8 | Action potential- (phys) (Lect) | 2 |
| 9 | Resting membrane potential (phys) (Lect) | 1 |
| 10 | Histology of cartilages, bones & skeletal muscles (Lect) (Ana) | 1 |
| 11 | Histology of cartilages, bones & skeletal muscles (Lab.) | 2 |
| 12 | Metabolism in skeletal muscles (Bio) (Lect) | 1 |
| 13 | **WK 1 : PBL -2** | 2 |
| 14 | Bone growth , remodeling and Osteoporosis (Ortho) SDL(T) | 3 |
| 15 | **WK 2 : PBL -1** | 2 |
| 16 | Anterior and posterior compartments of the arm (DR)(Ana.) | 2 |
| 17 | Cubital fossa, Elbow (DR) (Ana) | 2 |
| 18 | Posterior compartment of the forearm (DR) | 2 |
| 19 | **TBL-1 (Brachial plexus) (Ana)** | 2 |
| 20 | Anterior compartment of the forearm SDL (Practical) | 3 |
| 21 | Metabolic bone diseases(Path) (Lect) | 1 |
| 22 | Metabolic bone diseases (Med) (Lect) | 1 |
| 23 | Wrist and radio-ulnar joints (DR)(Ana.) | 2 |
| 24 | Myositis (Med) (Lect) | 1 |
| 25 | Hand (DR) (Ana.) | 2 |
| 26 | Surface anatomy, Dermatomes, Superficial veins, & lymphatic drainage of the upper limb (Ana.) (DR) | 2 |
| 27 | Imaging of upper limb normal & Abnormal (Radio) (Lect) | 1 |
| 28 | **WK 2 : PBL -2** | 2 |
| 29 | Properties of Peripheral nerves(Phy) SDL(T) | 3 |
| 30 | Biochemistry of Contractile proteins (Bio) (Lect) | 1 |
| 31 | Neuromuscular junction and transmission (phys) (Lect) | 1 |
| 32 | **WK 3 : PBL -1** | 2 |
| 33 | Bones of the lower limb (DR)(Ana.) | 2 |
| 34 | Muscle contraction (phys) (Lect) | 2 |
| 35 | Skeletal Muscle Relaxant (Pharma) (Lect) | 1 |
| 36 | Anterior and Medial compartments of thigh (DR)(Ana.) | 2 |
| 37 | Myopathies (Path) (Lect) | 1 |
| 38 | Muscular dystrophies (Path) (Lect) | 1 |
| 39 | Posterior compartments of the thigh and popliteal fossa (DR)(Ana.) | 2 |
| 40 | Drug affecting neuromuscular transmission(Pharma) (Lect) | 1 |
| 41 | Drug treatment of neuromuscular disorders, genetic and autoimmune (Pharma) (Lect) | 1 |
| 42 | **TBL-2 Basic principle of fracture (Ortho)** | 2 |
| 43 | Electromyography EMG & Nerve conduction studies NCS (Phy)(Lab.) | 2 |
| 44 | Gluteal region (DR) (Ana.) | 2 |
| 45 | **WK 3 : PBL -2** | 2 |
| 46 | Muscle twitch (phy) – (Lab.) | 2 |
| 47 | **WK 4 : PBL -1** | 2 |
| 48 | Joint diseases(immune and non-immunearthritis) (Path) (Dr. ) (Lect) | 1 |
| 49 | Anatomy of the back & vertebral column (Ana.) (DR) | 2 |
| 50 | Clinical correlations of upper limbs (Ana.) (Lect) | 1 |
| 51 | Metabolism of purine nucleotides (Bio) (Lect) | 1 |
| 52 | Joint diseases (Med) (Lect) | 1 |
| 53 | Hip joint (Ana.) (DR) | 2 |
| 54 | Knee joint (Ana.) (DR) | 2 |
| 55 | Anterior, lateral Compartments of leg (Ana.) DR | 2 |
| 56 | Radiology of Spine (Radio) (Lect) | 1 |
| 57 | Bone & joint infection (Med) (Lect) | 1 |
| 58 | **TBL-3 Seronegative spondyloarthropathy (Medicine)** | 2 |
| 59 | Posterior compartment of the leg(DR) | 2 |
| 60 | Non-steroidal Anti-inflammatory Drugs (NSAID)(Pharma) (Lect) | 1 |
| 61 | Drug TTT of Gout (Pharma) (Lect) | 1 |
| 62 | **WK 4 : PBL -2** | 2 |
| 63 | Ankle & foot (DR)(Dr.) | 2 |
| 64 | **WK 5 : PBL -1** | 2 |
| 65 | Surface anatomy, Superficial veins, Cutaneous innervation, & lymphatic drainage of the lower limb (Ana.) (DR) | 2 |
| 66 | Interaction between Vitamin D & calcium Homeostasis( Bio) (Lect) | 1 |
| 67 | Subcutaneous mycoses (mycetomasporotrichosis and chromoblastomycosis) (Mic) (Lect) | 1 |
| 68 | Clinical correlations of lower limbs (Ana.) (Lect) | 1 |
| 69 | Bone tumors (Path) (Lect) | 1 |
| 70 | **Bedside teaching** (History taken & Examination of the MSS) (Med) | 3 |
| 71 | Soft Tissue Tumor (Path) (Dr. ) (Lect) | 2 |
| 72 | **TBL-4** (Non-infectious arthropathy) (Pathology) | 2 |
| 73 | Bacterial causes of septic arthritis and osteomyelitis (Mic) (Lect) | 2 |
| 74 | **WK 5 : PBL -2** | 2 |
| 75 | ( Bacteria causing osteomyelitis and septic arthritis-staphylococci) (Lab.) Micro | 2 |
| 76 | **WK 6 : PBL -1** | 2 |
| 77 | Musculoskeletal Pathology -1 (path) (Lab.) (Dr. ) | 2 |
| 78 | Musculoskeletal Pathology -2 (path) (Lab.) (Dr. ) | 2 |
| 79 | Agents affecting Bone & Calcium Homeostasis(Pharma) (Lect) | 1 |
| 80 | Parasites affecting MSS –1(Trichinella spirals) (Mic) (Lect) | 1 |
| 81 | Parasites affecting MSS - 2 (Taenia allium cysticercosis)(Mic) (Lect) | 1 |
| 82 | **Skill Lab-1** ( principles of cast application & spine immobilization in trauma patients ) (Ortho) | 3 |
| 83 | Opioid & non-opioid (Pharma) (Lect) | 1 |
| 84 | Imaging of lower limb Normal & Abnormal (Radio) (Lect) | 1 |
| 85 | **TBL-5 (Drugs used in musculoskeletal disorders) (Pharma)** | 2 |
| 86 | **Bedside teaching**  **(** History taken and Examination of MSS in Pediatrics) (Pedia) | 3 |
| 87 | **WK 6 : PBL -2** | 2 |
| **Total** | | 145 |

# D. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Mid-bock exam: | 4th | 20% |
| **2** | TBL evaluation | 2nd -6th | 10% |
| **3** | PBL evaluation | 1st -6th | 10% |
| **4** | End of course exams:  -Theory: MCQs (30%).  - Practical: OSPE and/or OSCE (30%). | 7th | 60% |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Learning Resources and Facilities

## 1. Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | **A. Anatomy, Embryology And Histology:**   * Grant’s Atlas of anatomy. Anne M.R Angur , Arthur F dalley, 13th edition 2016 * Langman's Medical embryology. T.W. Sadler12th edition, 2012. * Jangueira’s Basic Histology: text and atlas .Anthony L. Mescher, 13th edition, 2013.  1. **Physiology:**   - Guyton Textbook of Medical Physiology, John E. Hall, 13thedition, 2016.   1. **Biochemistry:**  * Harpers Illustrated Biochemistry. Robert K. Murray et al, 29th edition, 2012.  1. **Pharmacology:**  * Goodman and Gillman. The Pharmacological basis of Therapeutics. New York: McGraw-Hill, 12th edition.2011.  1. **Pathology:**  * Robbins and Cotran Pathologic Basis of disease. Kumar etl al. 9th edition, 2015  1. **Microbiology:**  * Aneja, K R. ; Textbook of Basic and Applied Microbiology. c2015. * Bailey & Scott's diagnostic microbiology; Tille, Patricia M.13th ED. * Greenwood, David, 1935; Medical microbiology : a guide to microbial infections : pathogenesis, immunity, laboratory diagnosis, and control. 18th ED * Markell and Voge’s Medical parasitology. 9th Ed.  1. **Medicine:**  * Davidson's essentials of medicine , J.Alastair Innes.2nd edition.2016  1. **Orthopaedics**   \_ Apleys & Solomon’s system of orthopaedics and Trauma 10th edition-2017 |
| **Essential References Materials** | * Ganong’s Review of Medical Physiology, Kim E. Barrett et al, 25th edition, 2016. * Grant’s Atlas of Anatomy, Anne M.R.Agur, Arthur F. Dalley, 13th edition 2013 * Merkell and Voge’s Medical Parasitology, David T. John et al, 9th edition.2006. |
| **Electronic Materials** | **Electronic Materials, Websites etc:**   * Saudi Digital Library (<https://sdl.edu.sa>)   <http://www.adameducation.com/interactive-physiology> |
| **Other Learning Materials** | Journal of musculoskeletal research (<http://www.worldscientific.com/worldscinet/jmr>)  Musculoskeletal care (<http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1557-0681)> |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Lecture room suitable for students. 2. Laboratory (dissection room-DR, physiology, biochemistry, microbiology, pathology, pharmacology and clinical skills) suitable for students. 3. Teaching hospital for bedside teaching |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | 1. Computers, multimedia in lecture room, PBL room and laboratories. 2. There is a need for computers with networking and internet access for students learning. As well as a number of computers and multimedia projectors in the other rooms. |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Library supplied with reference, textbooks, and electronic resources. |

# F. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** |  |
| **Reference No.** |  |
| **Date** |  |