



## Course Specifications

|                      |  |
|----------------------|--|
| <b>Course Title:</b> | Musculoskeletal and Skin Block                   |
| <b>Course Code:</b>  | MSK112   |
| <b>Program:</b>      | Bachelor of Medicine, Bachelor of Surgery (MBBS) |
| <b>Department:</b>   | NA   |
| <b>College:</b>      | College of Medicine                              |
| <b>Institution:</b>  | Alfaisal University                              |

## Table of Contents

|   |          |
|---|----------|
| <b>A. Course Identification</b> .....   | <b>3</b> |
| 6. Mode of Instruction (mark all that apply) .....  | 3        |
| <b>B. Course Objectives and Learning Outcomes</b> .....   | <b>4</b> |
| 1. Course Description .....   | 4        |
| 2. Course Main Objective.....   | 4        |
| 3. Course Learning Outcomes .....   | 4        |
| <b>C. Course Content</b> .....  | <b>5</b> |
| <b>D. Teaching and Assessment</b> .....   | <b>5</b> |
| 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment<br>Methods ..... | 5        |
| 2. Assessment Tasks for Students .....  | 6        |
| <b>E. Student Academic Counseling and Support</b> .....   | <b>6</b> |
| <b>F. Learning Resources and Facilities</b> .....   | <b>7</b> |
| 1. Learning Resources .....   | 7        |
| 2. Facilities Required.....   | 7        |
| <b>G. Course Quality Evaluation</b> .....   | <b>8</b> |
| <b>H. Specification Approval Data</b> .....   | <b>8</b> |

## A. Course Identification

|  |
|--|
| <b>1. Credit hours:</b> 4 (3+0+2)  |
| <b>2. Course type</b>  |
| a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/> |
| b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>  |
| <b>3. Level/year at which this course is offered:</b> Sem 1, Year 1  |
| <b>4. Pre-requisites for this course (if any):</b> None  |
| <b>5. Co-requisites for this course (if any):</b> None   |

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

| No | Mode of Instruction   | Contact Hours | Percentage |
|----|-----------------------|---------------|------------|
| 1  | Traditional classroom | 60            | 62%        |
| 2  | TBL, Labs             | 37            | 38%        |

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

| No | Activity          | Contact Hours |
|----|-------------------|---------------|
| 1  | Lecture           | 60            |
| 2  | Laboratory/Studio | 37            |
| 3  | Tutorial          |               |
| 4  | Others (specify)  |               |
|    | <b>Total</b>      | 97            |

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The Musculoskeletal system is concerned with the study of muscles, bones, and joints with their blood vessels, lymphatic, and nerves. This block consists of the study of the upper limb and lower limb. In addition, this block deals with general aspects of human development and specifically the development of the musculoskeletal system including embryonic development of dermatome and myotome and congenital anomalies such as amelia, meromelia, syndactylism, pes cavus, congenital dislocation of the hip joint. The students are exposed to high-yield anatomy topics such as shoulder joint dislocation, supracondylar fracture, fracture neck femur, and foot drop to emphasize the need for the basic knowledge of this system (block) and to appreciate an integrated approach to patient care.

Accordingly, this system is integrated with anatomy (majority), physiology (muscle contraction and excitation-contraction coupling and bone physiology), and histology (mainly focusing on identifying major tissues related to the musculoskeletal system (bones, muscles, etc.)). The mode of teaching during the block is based on the team-based learning (TBL) and integrated teaching methods. The final assessment is conducted at week 7 following a thorough revision.

In summary, the block consists of the musculoskeletal system (upper and lower limb) related to gross anatomy, general embryology, limb development and microscopic anatomy of muscles, membrane potentials, contraction of skeletal muscles, excitation-contraction coupling, exercise physiology, contraction of smooth muscles and bone physiology.

### 2. Course Main Objective

The course/block is concerned with the study of muscles, bones, and joints with their blood vessels, lymphatic, and nerves. It consists of the study of the upper limb and lower limb. In addition, this block will deal with general aspects of human development and specifically the development of the musculoskeletal system. This system is integrated with anatomy (majority), physiology (muscle contraction and excitation-contraction coupling and bone physiology), and histology (mainly focusing on identifying major tissues in relation to the musculoskeletal system (bones, muscles, etc.)).

### 3. Course Learning Outcomes

| CLOs |  | Aligned PLOs |
|------|--|--------------|
| 1    | <b>Knowledge and Understanding</b>   |              |
| 1.1  | Relate the gross anatomy of upper and lower limb with common musculoskeletal injuries.                             | PLO1,3,5     |
| 1.2  | Relate the microscopic anatomy of muscles, bones, cartilage with clinical problems affecting these tissues.        | PLO1,3,5     |
| 1.3  | Relate the development of musculoskeletal system with common congenital abnormalities of limbs.                    | PLO3         |
| 1.4  | Describe the structure of cell membrane and relate it with mechanisms involved transport across the cell membrane. | PLO1,3       |
| 1.5  | Describe the mechanism of skeletal muscle contraction and excitation-contraction coupling.                         | PLO1,3       |

| CLOs     |   | Aligned PLOs |
|----------|---|--------------|
| 1.6      | Relate the calcium and phosphate metabolism with different types of bone diseases.  | PLO1,3       |
| <b>2</b> | <b>Skills :</b>   |              |
| 2.1      | Identify the muscles, nerves, vessels and bones of upper limb and lower on cadaveric dissections, prosections, plastinated specimens, 3D plastic models, and images e.g., X-rays, CT scan, etc. | PLO1,3,5     |
| 2.2      | Use a microscope to differentiate between normal versus abnormal the histological features of musculoskeletal tissues.  | PLO1,3,5     |
| 2.3      | Ability to identify major components of musculoskeletal components on radiological images.  | PLO1,3,5     |
| 2.4      | Examine the range of motion of different joints.  | PLO1         |
| 2.5      | Examine the limbs for neurovascular distribution.   | PLO1         |
| 2.6      | Ability to identify the major anatomical landmarks on humans.   | PLO1         |
| <b>3</b> | <b>Values:</b>  |              |
| 3.1      | Adhere to the attendance policy.  |              |
| 3.2      | Maintain professional conduct with colleagues, faculty, and staff.  |              |

### C. Course Content

| No           | List of Topics                                      | Contact Hours |
|--------------|---|---------------|
| 1            | Gross anatomy of upper and lower limb               | 35            |
| 2            | Physiology of excitation and contraction of muscles | 10            |
| 3            | Gastrulation and embryology of limb development     | 7             |
| 4            | Histology of bone and muscles                       | 8             |
| 5            | Structured lab sessions                             | 12            |
| 6            | TBLs, Evening Lab                                   | 25            |
| <b>Total</b> |   | <b>97</b>     |

### D. Teaching and Assessment

#### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| Code       | Course Learning Outcomes   | Teaching Strategies  | Assessment Methods                 |
|------------|--|----------------------|------------------------------------|
| <b>1.0</b> | <b>Knowledge and Understanding</b>   |                      |                                    |
| 1.1        | Relate the gross anatomy of upper and lower limb with common musculoskeletal injuries                              | Lectures, Labs, TBLs | Formative and summative assessment |
| 1.2        | Relate the microscopic anatomy of muscles, bones, cartilage with clinical problems affecting these tissues.        | Lectures, Labs, TBLs | Formative and summative assessment |
| 1.3        | Relate the development of musculoskeletal system with common congenital abnormalities of limbs.                    | Lectures, TBLs       | Formative and summative assessment |
| 1.4        | Describe the structure of cell membrane and relate it with mechanisms involved transport across the cell membrane. | Lectures, TBLs       | Formative and summative assessment |

| Code       | Course Learning Outcomes  | Teaching Strategies  | Assessment Methods                 |
|------------|---|----------------------|------------------------------------|
| 1.5        | Describe the mechanism of skeletal muscle contraction and excitation-contraction coupling.  | Lectures, TBLs       | Formative and summative assessment |
| 1.6        | Relate the calcium and phosphate metabolism with different types of bone diseases.  | Lectures, TBLs       | Formative and summative assessment |
| <b>2.0</b> | <b>Skills</b>   |                      |                                    |
| 2.1        | Identify the muscles, nerves, vessels and bones of upper limb and lower on cadaveric dissections, prosections, plastinated specimens, 3D plastic models, and images e.g., X-rays, CT scan, etc. | Lectures, Labs, TBLs | Formative and summative assessment |
| 2.2        | Use microscope to differentiate between normal versus abnormal the histological features of musculoskeletal tissues.  | Lectures, Labs, TBLs | Formative and summative assessment |
| 2.3        | Ability to identify major components of musculoskeletal components on radiological images   | Lectures, Labs, TBLs | Formative and summative assessment |
| 2.4        | Examine the range of motion of different joints   | Lectures, Labs, TBLs | Formative and summative assessment |
| 2.5        | Examine the limbs for neurovascular distribution  | Lectures, Labs, TBLs | Formative and summative assessment |
| 2.6        | Ability to identify the major anatomical landmarks on humans  | Lectures, Labs, TBLs | Formative and summative assessment |
| <b>3.0</b> | <b>Values</b>   |                      |                                    |
| 3.1        | Adhere to the attendance policy.  |                      | Continuous assessment              |
| 3.2        | Maintain professional conduct with colleagues, faculty, and staff.  |                      | Continuous assessment              |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|------------------|----------|--------------------------------------|
| 1 | TBL              | 2,3,5,6  | 5%                                   |
| 2 | Mid-term Exam    | 4        | 15%                                  |
| 3 | Final Exam (MCQ) | 7        | 80%                                  |

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

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**

The CoM program established its own mentorship program that employs all full-time faculty as mentors. Through this program, every medical student in the program is assigned a mentor

at the beginning of their first semester of studies. The program has a broad scope covering academic advising and counseling. The mentors handle all aspects related to academic advising, including academic planning, academic performance review, advice on course drop or withdrawal, study skills, and time management.

## F. Learning Resources and Facilities

### 1. Learning Resources

|                                       |   |
|---------------------------------------|---|
| <b>Required Textbooks</b>             | <ol style="list-style-type: none"> <li>1. Clinical Anatomy by Regions; Richard S. Snell, 9th edition.</li> <li>2. Last's Anatomy, Regional &amp; Applied; 12th edition.</li> <li>3. Clinically oriented Anatomy by Keith L. Moore, 6th edition.</li> <li>4. Wheater's Functional Histology; A text and color Atlas 6th edition.</li> <li>5. Chapters 1-6, Histology by Ross and Pawlina, Sixth Edition, Lippincott Williams and Wilkins, 2011.</li> <li>6. Langman's Medical Embryology, T. W. Sadler, Twelfth Edition, Published by Lippincott Williams and Wilkins, 2011.</li> <li>7. Before we are born; Essential of embryology and birth defects by Keith L. Moore, 8th edition.</li> <li>8. The Developing Human; Clinically Oriented Embryology by Keith L. Moore, 9th edition.</li> <li>9. Textbook of Medical Physiology, Guyton &amp; Hall, Twelfth Edition, Published by Saunders Elsevier, 2011.</li> </ol> |
| <b>Essential References Materials</b> | Power point presentations, Human anatomy-videos (Ackland's DVD atlas), Facilities at the anatomy resource centre such as models, Anatomage, ultrasound, Digital microscope and cadaveric dissection   |
| <b>Electronic Materials</b>           | <a href="http://www.PubMed.gov">PubMed: www.PubMed.gov</a>  |
| <b>Other Learning Materials</b>       | Computer-based programs/CD, professional standards or regulations and software.   |

### 2. Facilities Required

| Item   | Resources  |
|--|--|
| <b>Accommodation</b><br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms, Dissection Facilities, Examination Facilities  |
| <b>Technology Resources</b><br>(AV, data show, Smart Board, software, etc.)        | AV (Audio-Visual), Data Show, Smartboard, Moodle (E-learning Management), Anatomage, OlyVIA Histology Guide Software |

| Item   | Resources   |
|--|---|
| <b>Other Resources</b><br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Prosections, Plastinated Specimens, 3D Plastic Models, Microscope |

### G. Course Quality Evaluation

| Evaluation Areas/Issues              | Evaluators | Evaluation Methods |
|--------------------------------------|------------|--------------------|
| Course and Faculty Evaluation Survey | Students   | Survey             |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

### H. Specification Approval Data

|                            |  |
|----------------------------|--|
| <b>Council / Committee</b> |  |
| <b>Reference No.</b>       |  |
| <b>Date</b>                |  |