Kingdom of Saudi Arabia
Ministry of Higher Education
Majmaah University
College of Medicine

جامعة المجمعة
Majmaah University

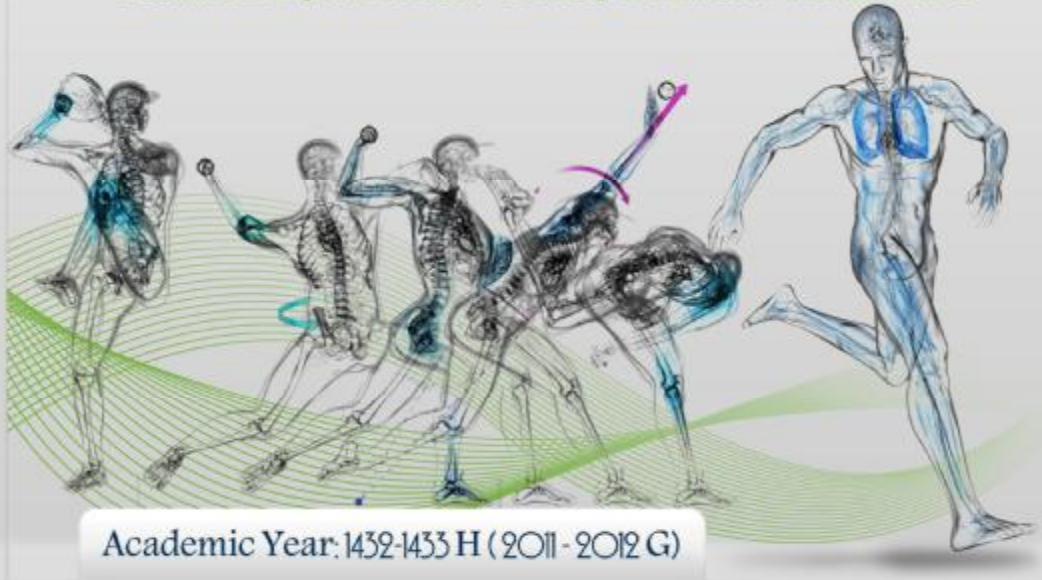
المملكة العربية السعودية
وزارة التعليم العالي
جامعة المجمعة
كلية الطب

MOVEMENT *AND* CONTROL MODULE

MED 121

STUDY GUIDE

Phase 2, Second Year, Second Semester



Academic Year: 1432-1433 H (2011 - 2012 G)

جامعة المجمعة
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Dear student ,

We are delighted to welcome you in your first exciting and important module "locomotion and control" of second semester that will inform and update you about the concepts of muscloskeletal system and clinical concepts related to this system.
We have a big list of interesting and involving teaching and learning materials and methods to complement the highly relevant line up of content topics that will be introduced to you during this module.
Best wishes from your module committee members

Contents

A Message *from the Dean*

It is my pleasure to welcome you once again, now being for the second module of the second semester. As you have seen that the first semester has been quite interesting and it has led to a good foundation for your further Medical education. The second semester basically deals with integration of paraclinical subjects with basic sciences. Faculty members are continually striving to update and improve the curriculum and teaching methodologies, along with assessment tools. Like in the previous module the curriculum involves classroom didactics; problem based small group learning sessions, interactive classroom technology, small group tutorials, and structured self-study modules. Our purpose is to make learning not only timely, effective and efficient, but also enjoyable.

Your interest, involvement and feedback would reflect on our processes and successes in medical education, and will help us in our continuing effort for improving the system.

I hope that this module too would be interesting and would lay a solid foundation for further medical education and future goals in medicine

Dr. Mohammed O. Al-Rukban
Dean of the College of Medicine
Majmaah University

General Module Information

Module Title	Movement and Control
Module Code and Number	MED121
Credit Hour	5 hours
Module Duration	7 Weeks
Module Starting Dates	06/04/1433 (28/02/2012)
Module Coordinator Assistant Coordinator	Dr. Mohammed Rehan Dr. Abdullah Al Ghamadi

Module Planning Committee Members:

- Prof. Mazen Al-Qato (Pharmacology)
- Prof. Wahengbam Singh (Community Medicine)
- Dr. Fahim Haider Jafari (Anatomy)
- Dr. Mohmmad Yunus (Pathology)
- Dr. Muhammad Ashraf (Medicine)
- Dr. Almullah Fawaz (Microbiology)
- Dr. Sherif Saleh (Biochemistry)
- Dr. Kamran Afzal (Physiology)
- Dr. Raed Alzahrani (Anatomy)

Module Executive Committee

Dr. Fahim Haider Jafari
Dr. Muhammad Ashraf
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Dr. Raed Alzahrani

Module Description

"…although the diseases that kill attract much of the public's attention, musculoskeletal or rheumatic diseases are the major cause of morbidity throughout the world, having a substantial influence on health and quality of life, and inflicting an enormous burden of cost on health systems …" (WHO 2003)

Overview:

According to ministry of health the prevalence of musculoskeletal conditions in the population of Saudia Arabia is increasing. Many patients will be affected by musculoskeletal conditions including chronic pain and a decrease in quality of their lives. An important element of musculoskeletal module is to highlight the impact of musculoskeletal conditions on the quality of life and society. Students are expected to recognize that although musculoskeletal diseases are not a major cause of mortality, they are important cause of morbidity.

Module Objectives

At the end of the module students are expected to:

1. ***Explain*** organization, development, functions and structure of limbs and spine (A)
2. ***Apply*** the knowledge of basic sciences in understanding problem/complaints related musculoskeletal system (A)
3. ***Identify*** the clinical manifestations and natural history of common musculoskeletal condition in Saudi Arabia (B, D)
4. ***Recognize*** the physical, psychological, financial and other quality-of-life consequences of living with a chronic musculoskeletal condition (A, C)
5. ***Analyze*** the importance of interdisciplinary and inter-professional care using literature evidence (A,E)
6. ***Apply*** the clinical skills and identify scientific basis for diagnosing and managing musculoskeletal complaints (B, C)

Outcomes of Majmaah curriculum, represented in module objectives

- A- Scientific in their approach to practice
- B- Proficient in clinical care
- C- Professional
- D- Community conscious
- E- A scholar

List of Teaching and Learning Contents

Theme I: General Introduction to the Musculoskeletal System

1. Introduction to musculoskeletal system:

1. Skeletal system:
   a. Introduction (Axial skeleton and Appendicular skeleton)
   b. Different Functions (Structural Frame work, Exchange of Minerals like calcium)
2. Muscular system:
   a. Introduction
   b. Name different muscles
   c. Functions of smooth and skeletal muscles
3. Joints, tendon, ligament, bursae and modifications
4. Introduction to clinical applications related to musculoskeletal system especially in KSA

2. Contraction of skeletal muscles:

1. Internal structure of skeletal muscle fiber
2. Types of myofilaments
3. Mechanism of action of actin and myosin during muscle contraction
4. Role of calcium in muscle contraction
5. Mechanism of contraction in different muscle fibers
6. Clinical application (e.g., Muscle fatigue and denervation)

3. Glycogen metabolism and glycogen storage disease

1. Glycogen Metabolism:
   a. Glycogen synthesis
   b. Glycogenolysis
2. Glycogen storage diseases

4. Glycolysis of skeletal muscle:

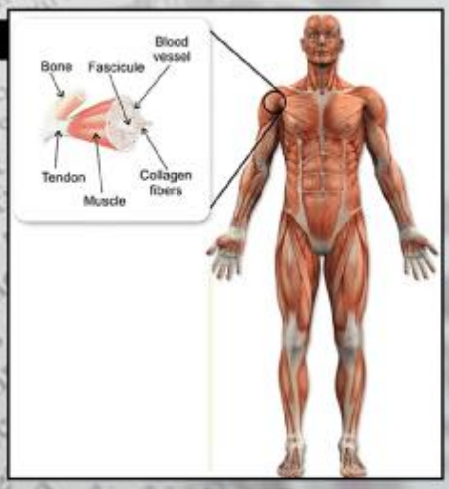
1. ATP as energy currency
2. Lactic acid production
3. Lactic acidosis

5. Calcium metabolism (Homeostasis):

1. Sources of calcium in diet
2. Role of hormones in keeping normal blood calcium level and bone mineralization
   a. Vitamin D
   b. Parathyroid hormone
   c. Calcitonin
3. Clinical Application (hyper and hypocalcemia)

6. Collagen:

1. Structure
2. Functions
3. Collagen diseases



List of Teaching and Learning Contents

Theme I: General Introduction to the Musculoskeletal System

7. Bone and cartilage development:

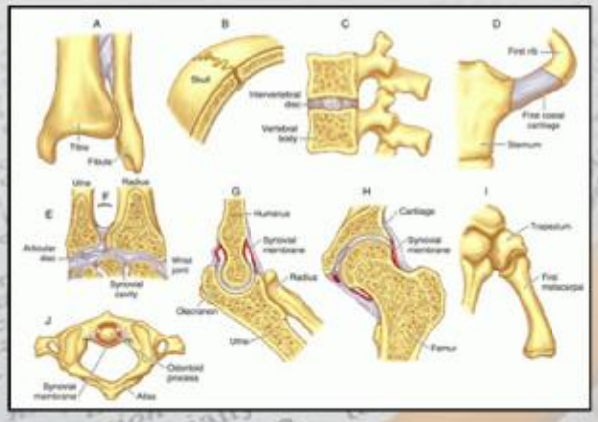
1. Ossification and classification
2. Development of bone (osteogenesis)
3. Development of cartilage
4. Growth and repair of bone (remodeling)
5. Clinical applications

8. Organization of somatic nervous system, spinal nerve and reflex arc:

1. Review various components of somatic nervous system

2. Spinal Nerve:
a. Define and Classify
b. Structure of Spinal Nerve
c. Clinical application

3. Reflex Arc



RESOURCES:

1. Lippincott's Illustrated Reviews: Biochemistry, 5th edition
2. Harper's Illustrated: Biochemistry, 28th edition (LANGE Basic Science)
3. Last's Anatomy: Regional and Applied, 12th edition
4. http://www.bioch.ox.ac.uk
5. http://themedicalbiochemistrypage.org

List of Teaching and Learning Contents

Theme II: Regional Anatomy of Musculoskeletal System

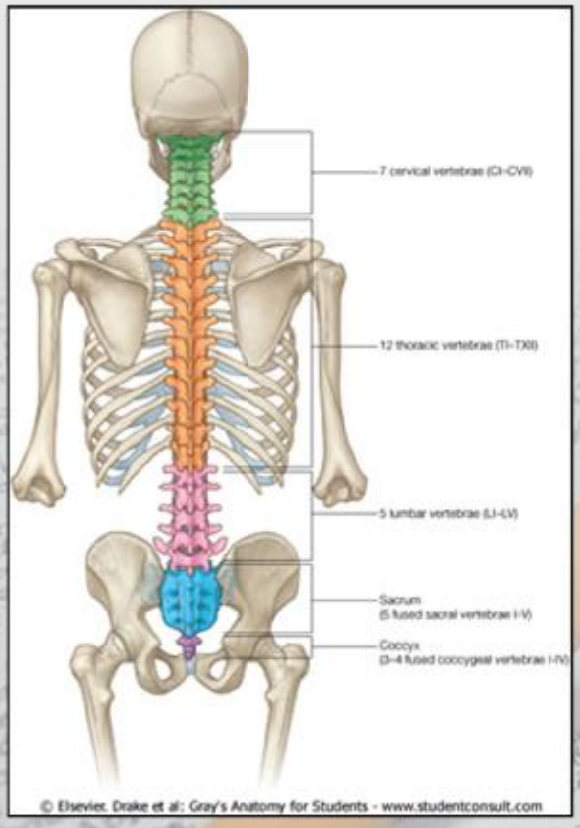
1. Vertebral Column

1. **Muscles:**
a. Name of Muscles
b. Arrangement

2. **Bones :**
a. Regions of vertebral column
b. Classify bones (Cervical, Thoracic, Lumbar and Sacral vertebrae)

3. **Joints:**
a. Understand different joints
b. Structure of Joints
c. Movements around various Joints

4. **Clinical application**



2. Upper Limb: Skin and Fascia

1. **Skin :**
a. Different features and modifications
b. Cutaneous innervation
c. Clinical application

2. **Fascia :**
a. Superficial fascia
b. Deep fascia and its Modifications
c. Clinical application

3. Upper Limb: Bones and Joints

1. **Bones :**
a. Bones of pectoral girdle
b. Bones of arm
c. Bones of forearm
d. Bones of wrist and hand
e. Clinical application

2. **Joints :**
a. Enumerate joints of upper limb
b. Contents, structure and functions of joints
c. Clinical application

4. Upper Limb: Pectoral Region and Breast

1. **Pectoral Region:**
a. Muscles, nerves, blood supply and general function
b. Axilla: Its boundaries and contents
c. Clinical application

2. **Breast:**
a. General gross features of the breast and its blood supply
b. Lymphatic drainage of the breast
c. Clinical application

List of Teaching and Learning Contents

Theme II: Regional Anatomy of Musculoskeletal System

5. Upper Limb: Shoulder and Arm

1. Shoulder:
a. Identify the posterior shoulder muscles
b. Rotator cuff
c. Give their general functions and nerve supply
d. Clinical application

2. Arm:
a. Compartments of arm
b. Muscles of arm
c. Nerve, blood supply and Lymphatic's
d. Clinical application

6. Upper Limb: Elbow and Forearm

1. Elbow:
a. Bones forming elbow joint
b. Ligaments of elbow joint
c. Muscles of elbow joint
d. Clinical application

2. Fore arm:
a. Flexor compartment of forearm
b. Extensor compartment of forearm
c. Cubital fossa and its contents
d. Clinical application

7. Upper Limb: Wrist and Hands

1. Wrist:
a. Retinaculum (types, attachments and related structures)
b. joints
c. Clinical application

2. Hand:
a. Muscles
b. Nerve supply, blood supply and lymphatic's
c. Spaces of hand
d. Clinical application

8. Upper Limb: Muscles

1. Muscles
2. Attachments
3. Nerve and blood supply
4. Functional importance
5. Clinical application
group of lymph nodes

List of Teaching and Learning Contents

Theme II: Regional Anatomy of Musculoskeletal System

9. Upper limb: Nerves, Vessels and Lymphatics

1. Nerves:
a. Brachial plexus:
- Root values
- Division, cords and its branches
- Clinical application

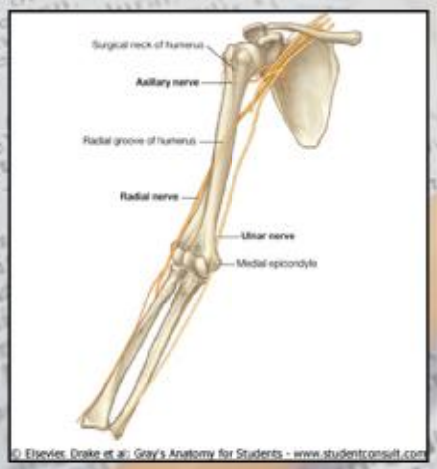
b. Nerves of upper limb

2. Blood vessels :
a. Blood vessels
b. Clinical application (e.g., Lympho-gram and angiogram)

3. Lymphatic drainage with different group of lymph nodes

10 .Upper limb: Range and Fineness of Movement

1. Different movements of upper limb
2. Range of movements
3. Fine movements
4. Clinical application



11. Lower limb: Bones and Joints

1. Bones of lower limb:
a. Pelvic girdle
b. Thigh
c. Leg
d. Foot

2. Joints :
a. Hip joint
b. Knee joint
c. Ankle joint

3. Clinical application (e.g. Radiological images correlating clinical condition)

12. Lower limb: Hip and Thigh

1. Gluteal region:
a. Structure
b. Vessels
c. Nerves
d. Clinical application

2. Thigh:
a. Compartments
b. Femoral triangle
c. Nerve supply, blood vessels and lymphatic's
d. Clinical application

List of Teaching and Learning Contents

Theme II: Regional Anatomy of Musculoskeletal System

13. Lower limb: Knee and Leg

1. Knee:

a. Knee joint

b. Popliteal fossa: boundaries and contents

c. Clinical application

2. Leg:

a. Anterior, Posterior and lateral compartments

b. Nerves, blood vessels and lymphatic's

c. Clinical application

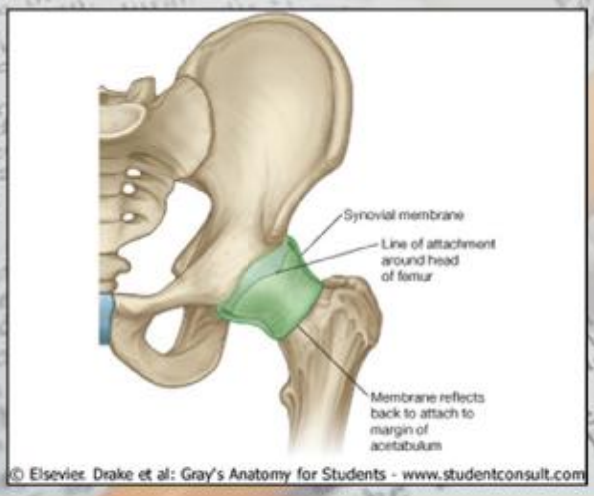
3. Ankle and foot:

a. Ankle:

- Retinaculum
- Joints
- Nerves, blood vessels and lymphatic's
- Clinical application

b. Foot:

- Introduction
- Arches
- List different muscles
- Clinical application



14. Lower limb: Muscles

1. Muscles of lower limb
2. Attachments
3. Nerve and blood supply
4. Action of different muscles
5. Clinical application

15. Lower Limb: Nerves, Vessels and Lymphatics

1. Nerves

a. Lumbosacral plexus

b. Enumerate different nerves

c. Clinical application

2. Vessels

a. Enumerate blood vessels

b. Supply and drainage

c. Clinical application

3. Lymphatic drainage:

a. Lymphatic drainage of lower limb

b. Different group of lymph nodes

c. Clinical application

16. Development of Limbs and Vertebral Column

1. Development of upper limb
2. Development of lower limb
3. Development of vertebral column
4. Congenital malformations

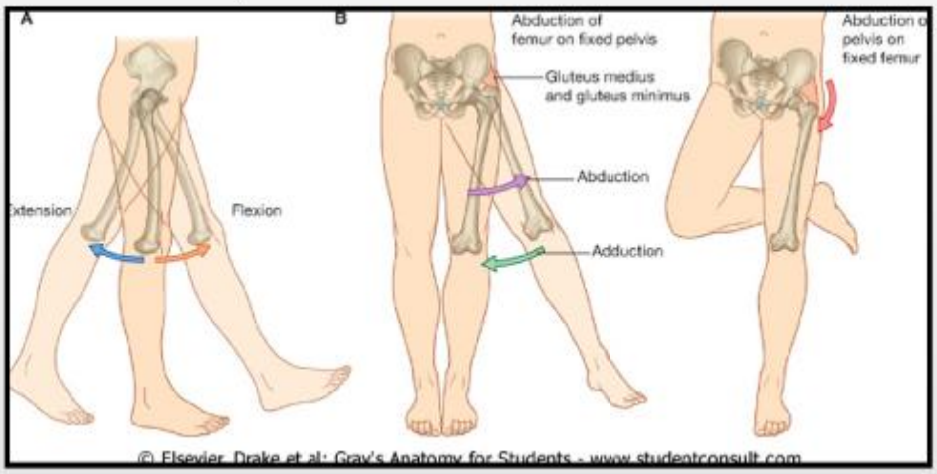
List of Teaching and Learning Contents

Theme II: Regional Anatomy of Musculoskeletal System

17. Mechanisms of walking and weight transmission

1. Steps of mechanism of walking
2. Step of mechanism of weight transmission
3. Clinical application

(highlight importance in weight bearing and reason of diseases like Osteoarthritis, common in KSA)



RESOURCES:

1. Last's Anatomy: Regional and Applied, 12edition
2. Clinical Anatomy by Regions: Richard. S. Snell, 9th edition
3. Langman's Medical Embryology: Thomas W. Sandler, 12th edition
4. Junqueira's Basic Histology: Text and Atlas, 12th Edition
5. http://www.harford.edu/faculty/EDuncan/links.htm

List of Teaching and Learning Contents

Theme III: Pathophysiology of Musculoskeletal System

1. Impact of aging: wear and tear

1. Definition of aging
2. Changes in musculoskeletal system with advancing age
3. Pathophysiological changes in musculoskeletal system with advancing age
4. Clinical application

2. Fractures and healing

1. Definition
2. List of common fractures
3. Pathophysiology of fractures
4. Process of healing

3. Diseases of bones and joints: Inflammatory and infective diseases

1. Enlist the common inflammatory and infective diseases of bones and joints
2. Pathogenesis of infective diseases of bone and joints
3. Functional and structural derangements in inflammatory and infective diseases of bone and joints

4. Diseases of bones and joints: Non inflammatory and degenerative diseases

1. Common non inflammatory diseases of bones and joints
2. Pathogenesis of non inflammatory and degenerative conditions
3. Functional and structural derangement in non inflammatory diseases

5. Mechanism of pain

1. Definitionypes of pain
3. Mechanism of pain
4. Nerve pathway of pain and pain receptor

List of Teaching and Learning Contents

Theme III: Pathophysiology of Musculoskeletal System

6. Therapeutic basis of pain control

1. Non-pharmacological

Physiotherapy

a. Thermotherapy

b. Cryotherapy

2. Pharmacological

A. Non steroidal anti inflammatory drugs (NSAIDs)

a. Non specific cyclooxygenase (COX) inhibitors (Aspirin, Paracetamol)

b. Specific COX inhibitors

c. Mechanism of action

d. Side effects

B. Steroids

a. Role of steroids in pain management

b. Mechanism of action

c. Drugs and doses

d. Side effects and contraindications

e. Usage of steroids in musculoskeletal diseases

C. Opioids

a. Role of opioids in pain management

b. Mechanism of action

c. Drugs and doses

d. Side effects and contraindications

e. Usage of opioids in musculoskeletal diseases

RESOURCES:

1. Apley System of Orthopedics and Fractures: AG Apleys/L Solomons
2. Dorland's Medical Dictionary: Saunders
3. Robin's Basics Pathology, 9th edition
4. Illustrated Reviews Pharmacology: Lipincotts, 5th edition
5. http://www.medscape.com/
6. http://accessmedicine.com/

Detailed Objectives of the Module

Theme I: General Introduction to the Musculoskeletal System

1. Introduction to musculoskeletal system:

a. Describe the musculoskeletal system
b. Enlist different functions of musculoskeletal system
c. Describe the primary functions of the various organs or structures
d. Explain the meaning of the basic terminology related to musculoskeletal system
e. Recall three different types of muscular tissue
f. Describe how muscles perform in groups
g. Define tendon, ligament and bursa
h. Identify clinical application related to muscular system

2. Contraction of skeletal muscle:

a. Identify internal structure of skeletal muscle fiber
b. Describe types of myofilaments
c. Describe mechanism of action of actin and myosin during muscle contraction
d. Identify the role of calcium in muscle contraction
e. Explain mechanism of contraction in different muscle fibers
f. Identify clinical application (Muscle fatigue, denervation, electromyography)

3. Glycogen metabolism and glycogen storage diseases:

a. Identify the concept of storing excess energy (mainly from glucose) in certain body cells including skeletal muscle cells in the form of glycogen
b. Describe the main lines of glycogen metabolism and its biological importance especially in muscular exercise
c. Discuss the importance of studying glycogen structure and metabolism in verifying glycogen storage diseases including their clinical applications

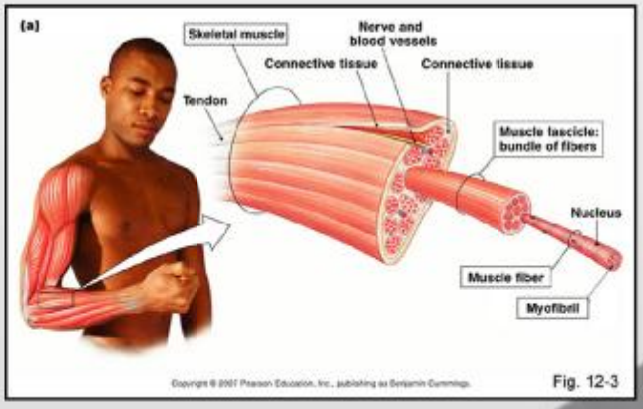


Fig. 12-3

Detailed Objectives of the Module

Theme I: General Introduction to the Musculoskeletal System

4. Glycolysis of skeletal muscles:
a. Explain the biochemical basis for energy production in skeletal muscle
b. Describe the pathway for lactic acid production and correlate it with the mechanism of muscular fatigue
c. Identify cases of increased lactic acid in blood with clinical applications

5. Collagen
a. Describe the structure and distribution of collagen molecules
b. Describe in brief biosynthesis of collagen
c. Discuss the function of collagen
d. Identify in brief collagen diseases

6. Bone and Cartilage Development:
a. Define and enlist types of ossification
b. Describe osteogenesis
c. Explain chondrogenesis
d. Describe remodeling
e. Identify clinical application

7. Organization of Somatic Nervous system, Spinal nerve and Reflex arc
a. Recall various components of somatic nervous system
b. Explain structure of typical spinal nerve
c. Describe reflex arc
d. Identify clinical application

Detailed Objectives of the Module

Theme II: Regional Anatomy of Musculoskeletal System

1. Vertebral column

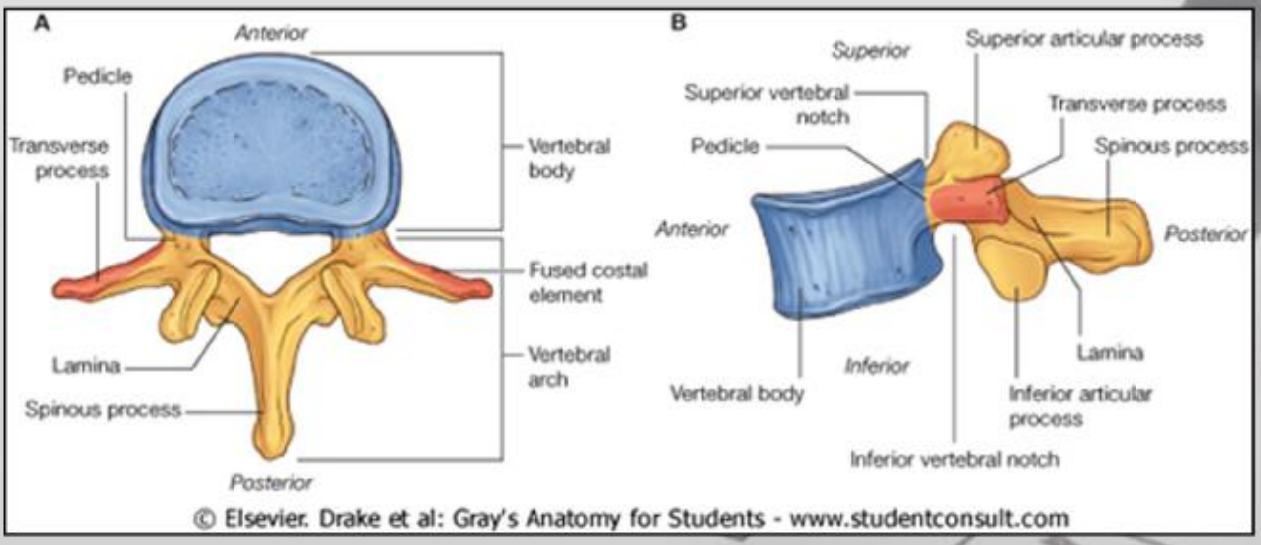
a. Enlist muscles of back with their arrangement
b. Enumerate divisions of vertebral column
c. Name and identify parts of typical vertebra
d. Explain how cervical, thoracic and lumbar vertebrae differ and be able to identify all parts
e. Explain normal curve of spine
f. Identify clinical application
g. Enumerate articulations of vertebral column
h. Explain articulation of atlas with axis
i. Enumerate articulation of atlas with occipital bone
j. Enumerate costovertebral articulations
k. Enlist various movements across inter vertebral articulations

2. Upper Limb and Pectoral Region: Skin and Fascia

a. Enumerate different features of skin of upper limb
b. Identify area of distribution of major cutaneous nerves in upper limb
c. Define fascia
d. Enumerate superficial and deep fascia of upper limb
e. Describe various modifications of deep fascia
f. Identify clinical application

3. Upper Limb: Bones and Joints

a. Enlist and describe the bones and joints of the pectoral girdle
b. Enumerate bones of arm
c. Enumerate bones of forearm, wrist and hand
d. Enlist joints of upper limb
e. Compare each joint of the upper limb and know its principal anatomical components, what type of joint it is



Detailed Objectives of the Module

Theme II: Regional Anatomy of Musculoskeletal System

f. Describe all the different kinds of movements that can occur at the joints of the upper limb
g. locate and identify various upper limb structures through their surface anatomy in practical sessions

4. Upper Limb: Pectoral Region and the Breast

a. Enumerate muscles, vessels, nerves and lymphatics of pectoral region
b. Describe axilla with its boundaries and contents
c. Explain the gross and microscopic anatomy of breast
d. Describe blood supply of breast
e. Indentify the lymph nodes which are involved in carcinoma of the breast.
f. Explain on anatomical basis the clinical features of carcinoma of the breast and why radial incision is used to drain breast abscesses

5. Upper Limb: Shoulder and Arm

a. Identify the posterior shoulder muscles
b. Describe rotator cuff
c. Enlist functions and nerve supply
d. Identify clinical application
e. Define compartments of arm
f. Enlist muscles of Arm
g. Explain nerve supply, blood supply and lymphatics
h. Identify clinical application

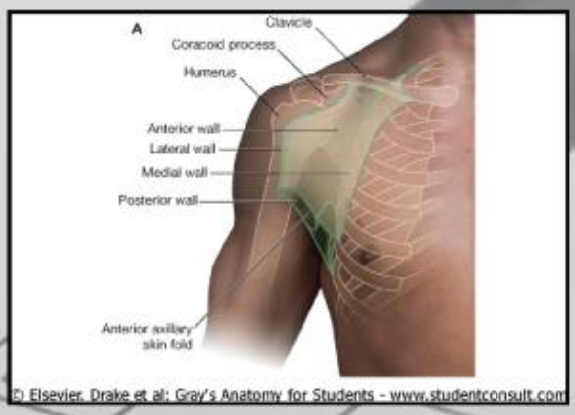
6. Upper Limb: Elbow and Fore arm

a. Enlist bones forming elbow joint
b. Explain elbow joint with its ligament
c. Identify prime movers of elbow joint
d. Enumerate blood supply of elbow joint
e. Identify clinical application
f. Enumerate compartments of forearm
g. Enlist muscles of anterior compartment of forearm
h. Enlist muscles of posterior compartment of forearm
i. Describe cubital fossa with its contents
j. Identify clinical application

7. Upper Limb: Wrist and Hand

1. Identify the anatomy of the wrist
2. Define and explain anatomy of retinaculum
3. Describe the anatomy of the carpal tunnel
4. Enumerate different joints of the wrist and hand
5. Identify clinical application
6. Enumerate muscles of hand

d. Identify functional importance
e. Identify clinical application



Detailed Objectives of the Module

Theme II: Regional Anatomy of Musculoskeletal System

7. Enlist blood supply, nerve supply and lymphatics
8. Identify and describe spaces of hand
9. Indentify clinical application

8. Upper Limb: Muscles

a. Enumerate muscles of upper limb
b. Define origin, insertion and action of upper limb muscles
c. Enlist nerve supply of upper limb muscles

9. Upper Limb: Nerve's, Vessels and Lymphatic's

a. Describe brachial plexus in terms of:
- Roots, trunks, divisions, cords and branches
- Motor distribution
- Sensory distribution
- Clinical application

b. Describe arterial and venous circulation of upper extremity in the terms of
- Vessels
- Course
- Distribution
- Clinical application

c. Describe the lymphatic circulation of the upper extremity

10. Upper Limb: Range and Fineness of Movement

a. Enlist movements of upper limb at different joints
b. Describe the range of motion at different joints of upper limb
c. Describe movement and dexterity of small muscles in hands and fingers
d. Identify clinical application

11. Lower Limb : Bones and Joints

a. Enumerate bones of pelvic girdle, thigh, leg and foot
b. Enumerate joints of lower limb
c. Describe movements at different joints of lower limb
d. Identify the common terms use to describe all kinds of movements that occur at the joints of the lower limb
e. Identify clinical application

12. Lower Limb: Hip and Thigh

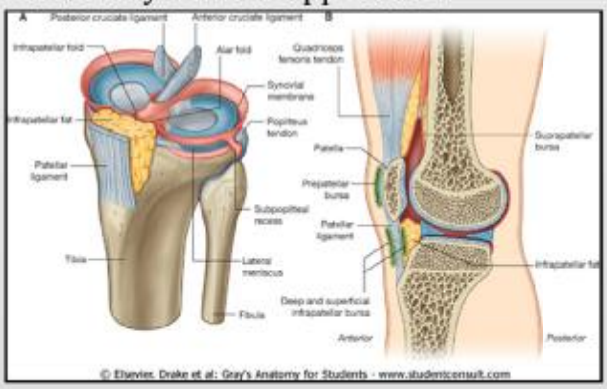
a. Describe articulation and arterial supply of hip joint
b. Describe various movements at hip joint
c. Describe the structures, nerves and vessels of gluteal region
d. Enumerate compartments of thigh with its nerves and muscles
e. Describe boundaries and contents of femoral triangle
f. Identify clinical application
the muscles producing these actions
h. Identify clinical application

Detailed Objectives of the Module

Theme II: Regional Anatomy of Musculoskeletal System

13. Lower Limb: Leg and Knee

a. Describe boundaries and contents of popliteal fossa
b. Enumerate the compartments of leg
c. Identify the muscles, nerves and vessels in each compartment of leg
d. Describe the articulation of knee joint
e. Recall the general plan of the collateral circulation at the knee
f. Identify the bony, cartilagenous, ligamentous and membranous components of the knee joint
g. Correlate knee joint movements with the muscles producing these actions
h. Identify clinical application



14. Lower Limb: Ankle and Foot

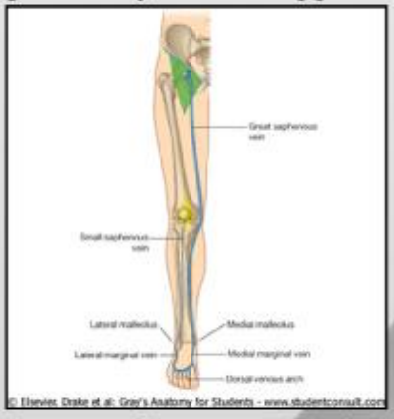
a. Enumerate different retinaculum at ankle
b. Enumerate joints of ankle
c. Describe structures passing through retinaculum
d. Describe the bony structures of foot with its arches, bones, ligaments and articulation
e. Identify muscles of foot
f. Identify clinical application

15. Lower Limb: Muscles

a. Enumerate muscles of lower limb
b. Identify origin and insertion of muscles of lower limb
c. Enumerate nerve supply and blood supply of muscles of lower limb
d. Describe action of different muscles of lower limb
e. Identify clinical application

16. Lower Limb: Nerve, Vessels and Lymphatics

a. Describe lumbosacral plexus
b. Enlist and describe nerves of lower limb
c. Enumerate blood vessels of lower limb
d. Explain vascular supply and drainage of lower limb
e. Explain lymphatic drainage of lower limb
f. Enumerate different group of lymph node
g. Identify clinical application



17. Development of Limbs and Vertebral Column

a. Describe the development of upper limb
b. Describe the development of lower limb
c. Describe the development of vertebral column
d. Identify the clinical application

Detailed Objectives of the Module

Theme III: Pathophysiology of Musculoskeletal System

1. Impact of Aging: Wear and Tear

a. Define aging

b. Discuss changes in musculoskeletal system with advancing age

c. Describe pathophysiological changes in musculoskeletal system with advancing age

d. Identify clinical application

2. Fractures and Healing

a. Define fracture and healing

b. Enlist common fractures

c. Describe pathophysiology of fractures

d. Explain process of healing

3. Diseases of Bones and Joints: Inflammatory and Infective

a. Enlist common inflammatory and infective disorders of bone and joints

b. Describe pathogenesis of inflammatory and infective disorders of bone and joints

c. Describe functional and structural derangements in inflammatory and infective disorders of bones and joints

derangements in inflammatory disorders of bones and joints

4. Diseases of Bones and Joints: Non-inflammatory

a. Enlist common non inflammatory disorders of bones and joints

b. Describe pathogenesis of non inflammatory disorders of bone and joints

c. Describe functional and structural derangements in inflammatory disorders of bones and joints

5. Diseases of Bone and Joints: Degenerative

a. Enlist common degenerative conditions of bone and joints

b. Describe pathophysiology of degenerative conditions of bone and joints

c. Describe structural and functional derangements in infective diseases of bone and joints

Detailed Objectives of the Module

Theme III: Pathophysiology of Musculoskeletal System

6. Therapeutic Basis of Pain Control

1. Non pharmacological

a.Enlist modalities of non pharmacological basis of pain control

b. Discuss the role of physiotherapy in pain control

2. Pharmacological

A. Non steroidal anti-inflammatory drugs (NSAIDs)

a.Discuss pharmacological basis of pain control

b. Define Non steroidal anti-inflammatory drugs

c.Identify specific and non specific cyclooxygenase (COX) inhibitors

d. Discuss side effects of NSAIDS and contraindications

B. Steroids

a.Describe the role of steroids in pain management

b. Explain the mechanism of action of steroids

c.Identify dosage and drugs of steroidal group

d. Discuss the role of steroids in management of musculoskeletal diseases

e.Discuss side effects and contraindications of steroids

C.Opioids

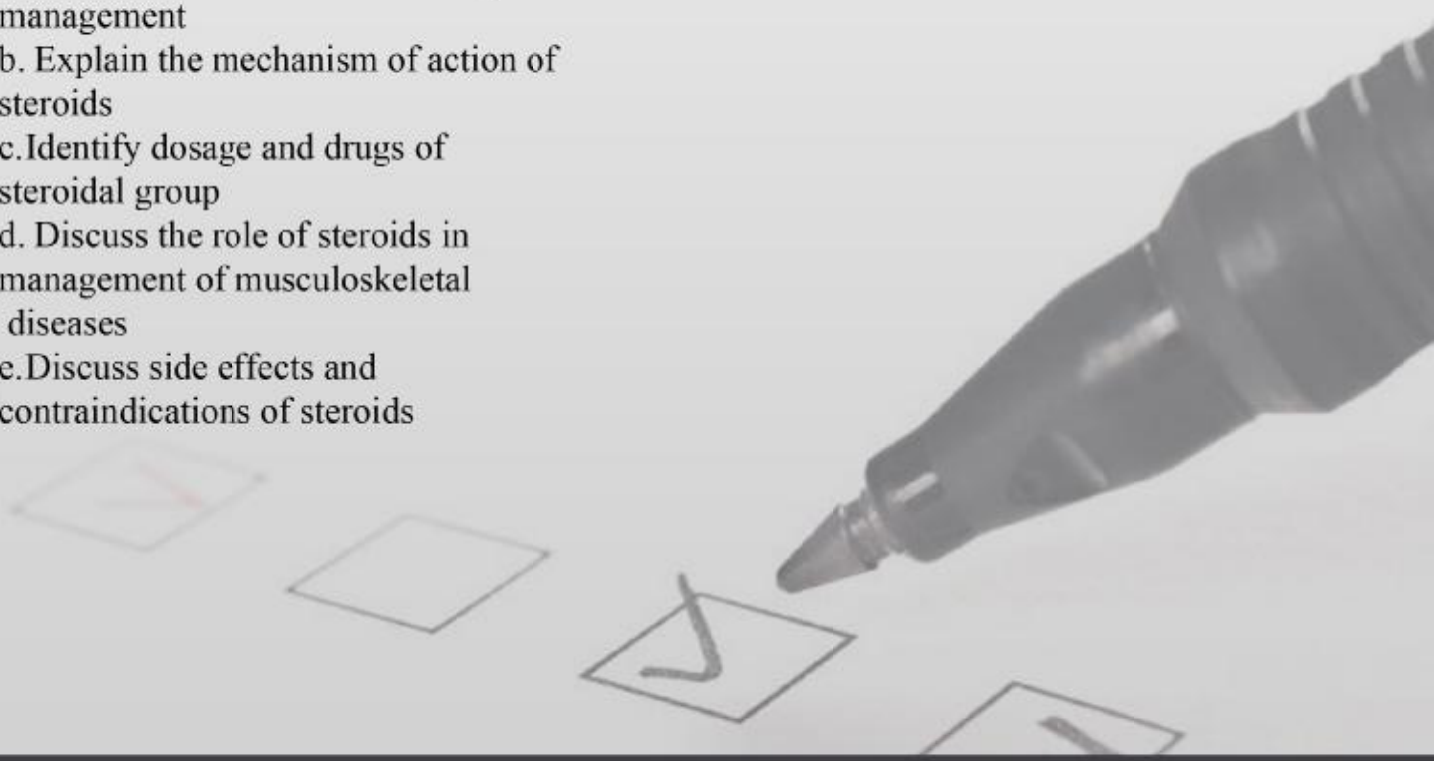
a.Describe the role of opioids in pain management

b. Explain the mechanism of action of opioids

c.Identify dosage and drugs of opioids group

d. Discuss the role of opioids in management of musculoskeletal diseases

e.Discuss side effects and contraindications of opioids



Problem-Based Learning (PBL)

1-PBL-1:

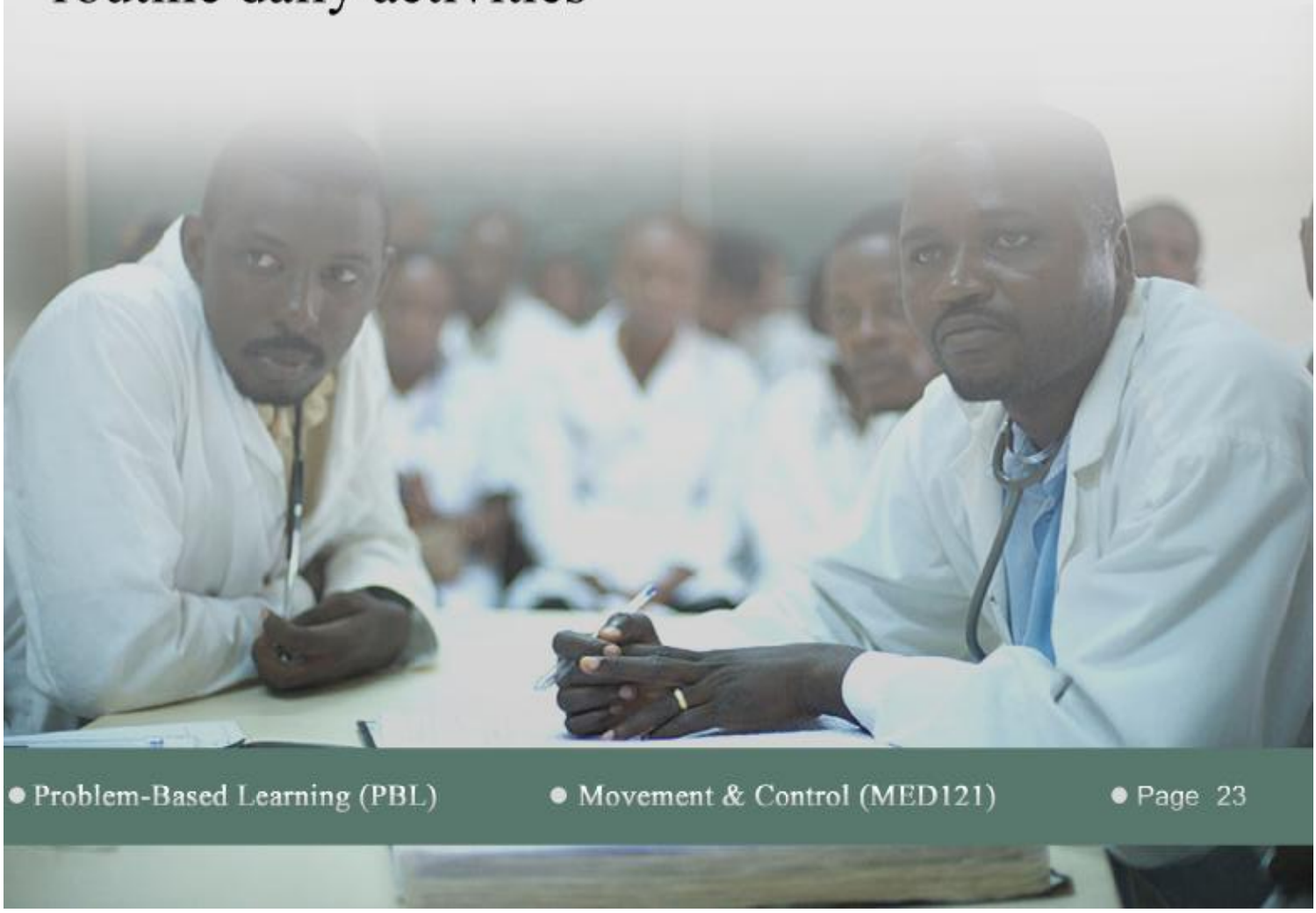
An office secretary scared of losing her job

2-PBL-2:

Marketing engineer after a road traffic accident (RTA)

3-PBL-3:

A middle aged lady not able to carry out her routine daily activities



Field Visits

I. Guidelines for field visits:

A. Students should follow instruction given to them prior to the visit.

B. A handout is given to students before every visit illustrating program, objectives and other details concerning the visit. Students are required to read handouts carefully

C. Students are encouraged to go to hospital utilizing transportation which is secured by the College administration. Transportation will be available half an hour prior to visit.
Students are expected to behave as future doctors. However, any misconduct by any student will be reported to the College administration for appropriate measures according to University rules

D. At the end of each field visit, students are required to give their feedback regarding fulfillment of the objectives of the visit and clarify any comments and suggestions they may have. Feedback will be discussed in a scheduled session that will be held after the visit in the College

Field Visits

II. Objectives of field visits:

1. Visit to King Khalid Hospital
At the end of the visit the student should be able to:

- Identify the common musculoskeletal (MS) disorders in Majmaah Hospital, at in-patient and ambulatory care levels
- Discuss the MS disorders as a major cause of morbidity
- Discuss the role of medical and paramedical staff in treating MS disorders
- Discuss the role of different modalities of treatment in treating MS disorders, including physiotherapy

2. Visit to Rehabilitation Centre
At the end of the visit, the student should be able to:

- Identify roles of the rehabilitation centre in dealing with MS disorders
- Identify the services available at rehabilitation Centre
- Discuss integration of rehabilitation centre with intensive care unit
- Describe acute rehabilitation floor
- Discuss role of emotional support and psychological interventions at rehabilitation centre

Seminars

I. Guidelines for Seminar Sessions:

1. Three seminars are scheduled during the module. Duration of each seminar is 2 hours.

2. The whole batch of students of the College of Medicine are divided into four groups, A, B, C and D (10 students in each group)

3. Groups are recommended to assign a group leader chosen by students. Each group leader will be in charge for contacting the Module Coordinator, Dr. Mohammad Rehan Asad

4. A staff member will be assigned as a Seminar Supervisor for each group
The Seminar Supervisor will be take care of his group regarding:
- Assigning students for giving presentations in coordination with the group leader
- Assigning of topics of seminars in coordination with group leader.
- Direct helping and advising students during preparation of presentations
- Leading and supervising of seminars regarding securing convenient venue, managing timing for each presentations and keeping order during seminars sessions
- Facilitating group discussion after each presentation
- Assessing students

5. Three to four students are assigned for giving presentations in each seminar

6. Each of the assigned students has to prepare a presentation for his assigned topic
- The presentation should be formatted by Microsoft office PowerPoint program
- Only five to eight slides are required for each presentation
- Presentation should last for seven to ten minutes only. Five minutes will be allowed for whole group discussion
- Five to ten minutes are devoted for the tutor for giving feedback and comments

7. Other students (not giving presentations) have to properly prepare themselves for active collaboration and discussion by reading topics related to seminars prior to attending (not just passive listening).

II. Topics and Objectives of Seminars:

1. Calcium Metabolism

a. Describe sources of calcium in the body
b. Discuss various roles of calcium for human body
c. Explain the regulation of calcium level in blood (calcium homeostasis):
- Vitamin D
- Parathyroid hormone (PTH)
- Calcitonin

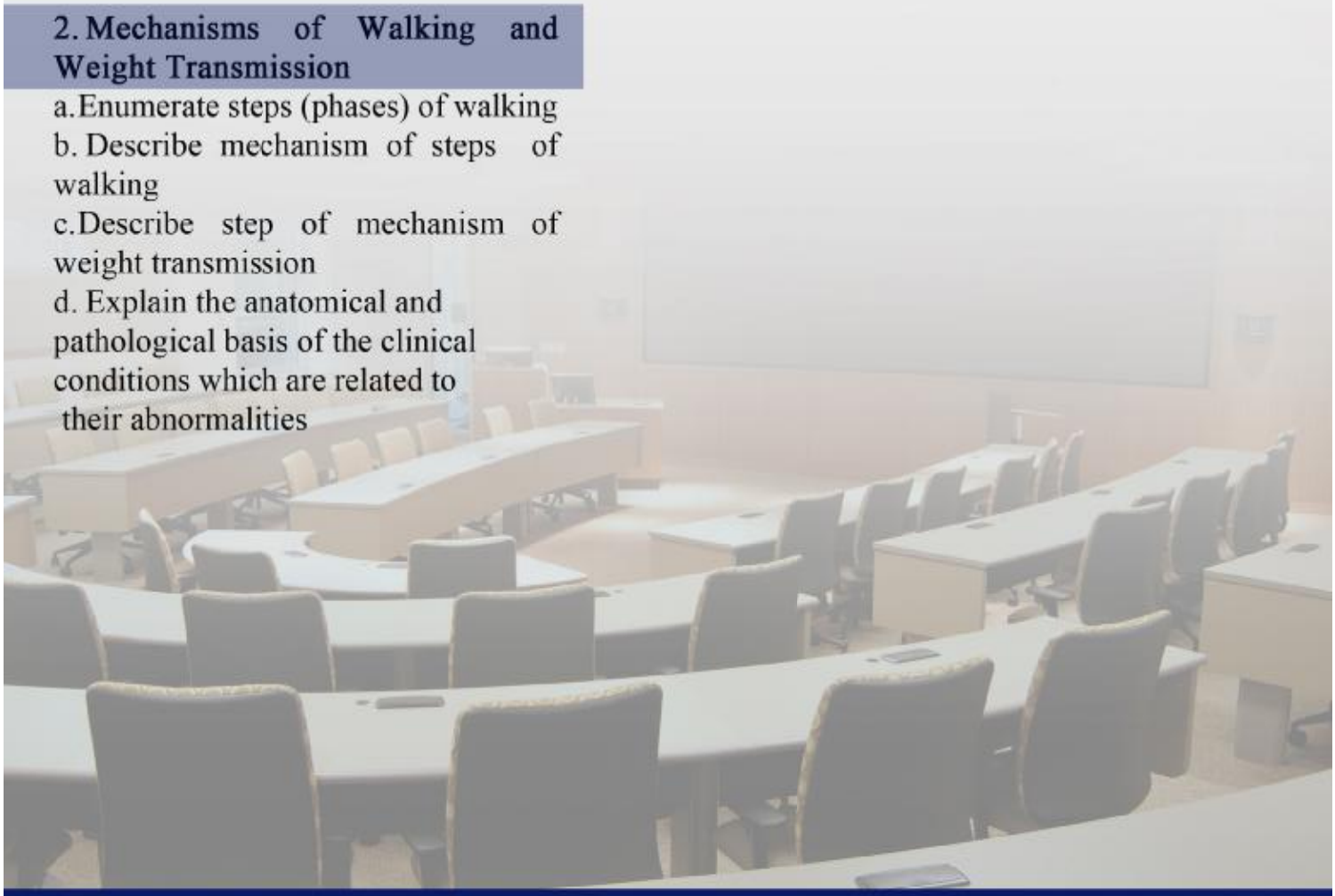
d. Explain the biochemical basis of disorders of calcium metabolism (hypo- and hyper-calcemia) and their management

2. Mechanisms of Walking and Weight Transmission

a. Enumerate steps (phases) of walking
b. Describe mechanism of steps of walking
c. Describe step of mechanism of weight transmission
d. Explain the anatomical and pathological basis of the clinical conditions which are related to their abnormalities

3. Mechanism of Pain and Pain Pathway

a. Define pain and its pathway
b. Discuss mechanism of pain
c. Identify types of pain
d. Describe nerve pathway for pain
e. Identify pain receptors
f. Explain how the pain pathway can be manipulated to relieve pain
g. Explain the role of NSAIDs and steroids in modifying these response
h. Classify different types of NSAIDs
i. Explain its main side effects and contraindication



Case Discussion (CD)

I. Guidelines of CD Sessions:

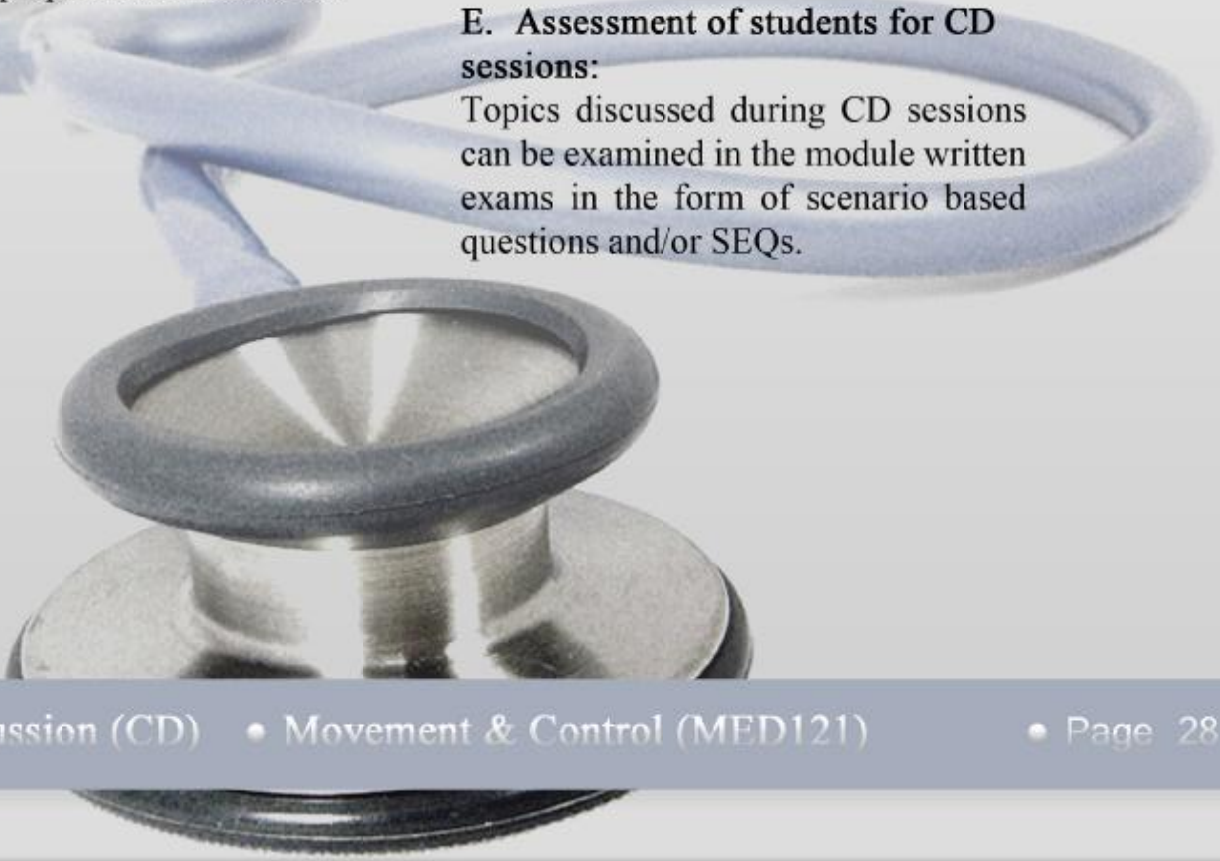
A. Two scheduled CD sessions will be held during the module of the Movement and Control

B. Instructional method:
Small group learning

C. Students preparation for the CD sessions:
One week before each scheduled CD session, students will be given the full scenario of the case to be discussed. All students are asked and highly encouraged to read the scenario carefully and try to prepare themselves for the team-based learning discussion by trying to answer questions provided. Utilizing textbooks in the Medical Library and useful websites are of profound help in achieving convenient preparation in advance.

D. CD Sessions:
On the day of every CD session, the students will be divide in four groups and for each group a faculty member will help them as a facilitator. During each session, the case will be presented and discussed by the students of each group in collaboration with the facilitator. They should bring their learning resources to the learning session to actively search and verify information that will be discussed. The facilitator will be in charge for facilitating discussions and clarifying points issued by students. The facilitator may also pose some critical questions related to the topic during the discussion. Active collaboration of all the students in the discussion will be necessary.

E. Assessment of students for CD sessions:
Topics discussed during CD sessions can be examined in the module written exams in the form of scenario based questions and/or SEQs.



Case Discussion (CD): 1

Mrs. Aysha 55 years old, house wife came to King Khalid Hospital with a 3-year history of progressively worsening pain in both knees. She had difficulty in walking for more than 30 minutes because of pain, and her symptoms were exacerbated by kneeling, squatting, or descending stairs. Although sitting, resting, and reclining relieved her pain, she became stiff if she stayed in one position for too long.

Mrs. Aysha was obese (BMI≥32) and had a history of sedentary life style. On physical examination of the lower extremities revealed mild genu varum, which suggested medial compartment involvement. Her passive range of motion of both knees indicated palpable crepitus. She was unable to flex or extend her knees completely.

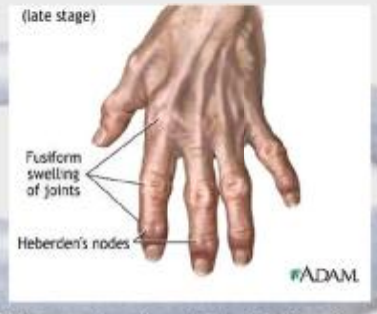
On physical examination Mrs. Aysha hands revealed enlargement of some of the proximal interphalangeal joints (Bouchard's nodes) and some of the distal interphalangeal joints (Heberden's nodes). The feet demonstrated similar deformities, with enlargement and reduced dorsiflexion of the first metatarsophalangeal joints.

Mrs. Aysha hip and back were examined thoroughly, as well, to rule out any contribution to the knee symptoms. She had full range of motion (ROM) of the lumbosacral, and all motions were pain free.

On radiographic examination radiographs showed osteophytes, joint space narrowing, and subchondral sclerosis bone. She was prescribed for NSAIDS and physiotherapy.

Picture showing varus deformity

Radiograph of knee joint showing



Picturesshowing Heberden's nodes

Case Discussion (CD): 1

Questions for discussion:

1. What would be the most probable diagnosis focussing on the complaints, history and examination?
2. What is the relation to the patient's sedentary life style, weight and age with her problem?
3. What are the modalities of management for this condition?
4. Identify the social and economic burden of pain associated with this condition?
5. How do NSAIDS act to relieve the symptoms?
6. Identify the side effects of pharmacological management of pain (NSAID) associated with this condition?

RESOURCES:

1. Lippincott's Illustrated Reviews: Biochemistry, 5th edition
2. Harper's Illustrated Biochemistry, 28th edition (LANGE Basic Science)
3. http://accessmedicine.com/
4. www.medscape.com

Case Discussion (CD): 2

A 42 years old obese man came to the emergency room complaining of severe pain in his left knee that did not enable him to walk properly.

He admitted that he had this problem many times over a period of two years first in his left big toe and then extended to his ankles and hips. Every time he experienced this case, he had to take analgesics that could improve his pain, but did not stop it completely. He also had a history of morning stiffness in wrist, knee and ankle joint. He also advised that pain increases with intake of high amount of meat and liver which are his favorite food.

On examination, his temperature was 37.8 oC, while other vital signs were normal. His BMI is 33. On physical examination severe hand deformities were found. His left knee showed to be swollen, tender, warm and with limited range of mobility. His left toe was revealed to be moderately swollen but was not tender.

Urine examination showed the presence of uric acid crystals. Uric acid was 10 mg/dl (normal level: 4-7 mg/dl).

Radiograph of hand

Photograph showing hand deformities

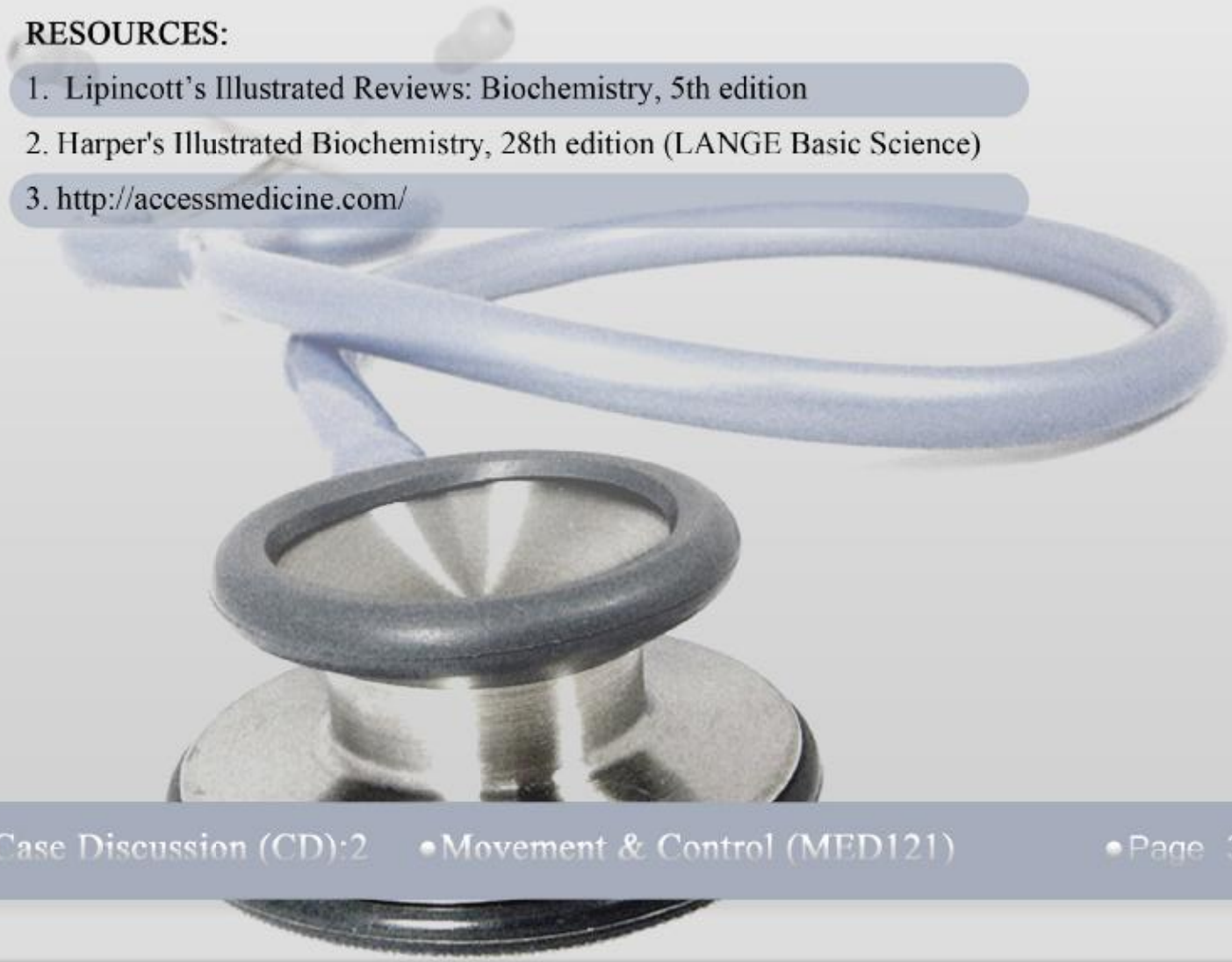
Case Discussion (CD): 2

Suggested questions:

a. What is the cause of this condition?
b. What are the factors that may predispose to this condition?
c. What is the biochemical basis of this condition?
d. What further laboratory investigations you may recommend to confirm your diagnosis?
e. Why do the symptoms worsen after a meal of meat and liver?
f. What are the common deformities' present in such condition?
g. How can you manage this patient?
h. How can you prevent the occurrence of this condition?

RESOURCES:

1. Lipincott's Illustrated Reviews: Biochemistry, 5th edition
2. Harper's Illustrated Biochemistry, 28th edition (LANGE Basic Science)
3. http://accessmedicine.com/



Objectives of Practical/Simulation/Clinical Skills:

At the end of the module, students are expected to have the ability to:

1. Demonstrate surface anatomy of upper and lower limbs
2. Assessing skeletal radiographs of upper, lower limbs and spine
3. Discuss the important aspect of history taking
4. Explain GALS (Gait, arms, legs and spine) examination
5. Identify bones in tutorial/practical classes (Upper limb, lower limb and vertebrae)
6. Demonstrate dissection videos in tutorial classes
7. Identify gross anatomical structures in dissected cadavers

Detailed Objectives for Practicals: Movement and Control

Theme I: Introduction to Musculoskeletal system

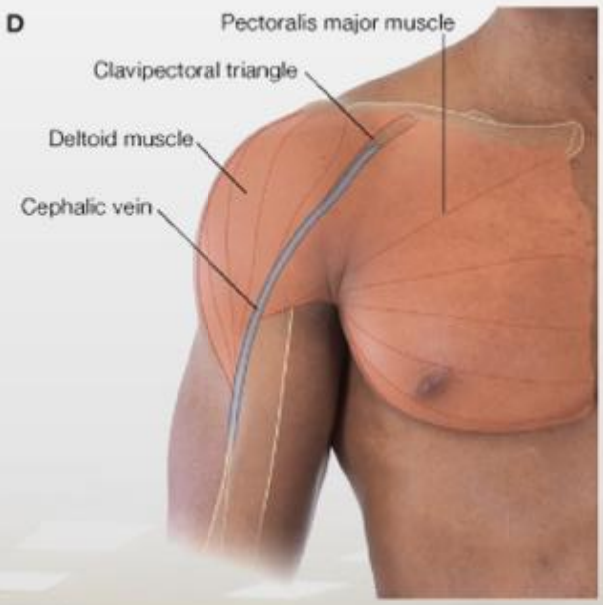
At the end of session student should be able to:

1. Introduction to Musculoskeletal System

1. Describe Appendicular and axial skeleton in practical by using the skeleton
2. Identify basic terminology by showing video related to topic
3. Identify tendon, ligament and bursae on simulation
4. Identify clinical application in shown videos

2. Organization of Somatic Nervous System, Spinal Nerve and Reflex Arc

1. Describe various components of somatic nervous system in practical by using the models
2. Explain all components of typical spinal nerve in practical by using the models
3. Explain reflex arc by showing video



Detailed Objectives for Practicals: Movement and Control

Theme II: Regional Anatomy of Musculoskeletal System

1. Vertebral Column

1. Identify regions of vertebral column in practical by using the skeleton
2. Identify bones (cervical, thoracic, lumbar and sacral) in practical by using the skeleton
3. Explain different joints of vertebral column in practical by using videos
4. Enlist different type of movements on vertebral joints on simulation
5. Name and describe the arrangement of muscles of back using plastinated models
6. Identify and explain using musculoskeletal anatomy and pathology, the clinical conditions related to vertebral column, using appropriate models/videos

2. Upper Limb: Bones and Joints

1. Identify bones of pectoral girdle using the skeleton
2. Identify bones of arm, forearm, wrist and hand using the skeleton
3. Enumerate different joints of upper limb using the skeleton
4. Identify different movements on various joints of upper limb on simulation
5. Identify and explain the anatomical and path ological basis of clinical conditions related to joints, using appropriate models/video

3. Upper Limb: Pectoral Region and Breast

1 . Identify different features, modifications, cutaneous innervation of skin and fascia of upper limb

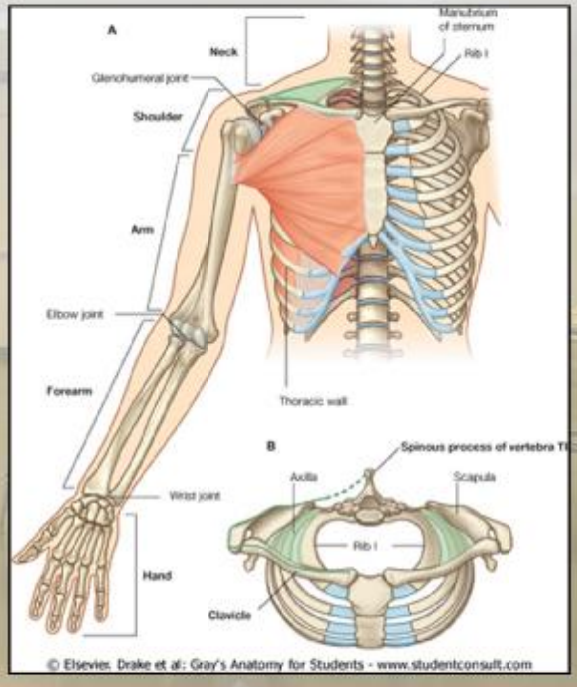
2.Identify muscles, nerves and blood vessels using plastinated models and dissected cadavers

3. Identify boundaries of axilla with its contents using plastinated models and dissected cadavers

4. Identify gross and microscopic features of breast using torso, histological slides and dissection on cadaver

5. Identify lymphatic drainage and blood supply of breast, shown in the dissection and videos

6. Identify and explain using basic anatomy the clinical conditions related to the pectoral region and breast, using appropriate models/videos



Detailed Objectives for Practicals: Movement and Control

4. Upper Limb: Shoulder and Arm

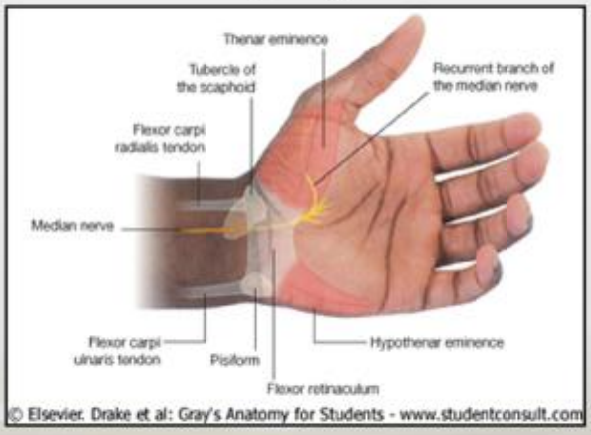
1. Identify muscles around shoulder joint by using plastinated models and dissection
2. Discuss practical application of rotator cuff in stabilizing shoulder joint
3. Enlist muscles of arm with compartments by using plastinated models and dissection of cadavers
4. Discuss nerve supply and blood supply , lymphatic supply of arm using plastinated models and dissection of cadavers
5. Identify surface marking of important structures across shoulder region by simulation
6. Identify clinical applications related to arm and shoulder joint e.g., compartment syndrome

5. Upper Limb: Elbow and Forearm

1. Identify bones forming elbow joint using the skeleton
2. Identify different movements across elbow joint through simulation
3. Identify surface marking of important land marks across elbow and forearm on simulation
4. Identify radiological anatomy of elbow region using radiographic pictures
5. Identify different muscles, compartments of forearm using plastinated models and dissection on cadavers
6. Identify clinical applications related to elbow and forearm, using videos/models

6. Upper Limb: Wrist and Hand

1. Identify important surface landmarks of wrist and hand on simulation
2. Identify different movements across wrist joint using simulation
3. Identify radiological anatomy of wrist and hand using radiological pictures
4. Identify muscles, nerves and vessels of hand using plastinated models and dissection on cadavers
5. Identify clinical applications related to wrist and hand, using videos/models



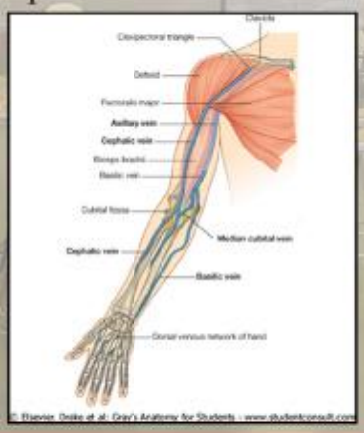
Detailed Objectives for Practicals: Movement and Control

7. Upper Limb: Muscles

1. Identify different groups of muscles of the upper limb using plastinated models and dissection on cadavers
2. Identify different actions of muscles of the upper limb using simulation
3. Identify surface land marks of different important tendons using simulation
4. Identify different muscles using dissection videos
5. Identify clinical applications related to upper limb, using videos/models

8. Upper Limb: Nerves, Vessels and Lymphatics

1. Identify root, trunk, cords and branches of brachial plexus using plastinated models and dissection on cadavers
2. Identify vessels of upper limb with its surface marking using simulation
3. Identify major lymph vessels and lymph nodes by dissection on cadavers and videos
4. Identify and explain the anatomical basis of t he clinical applications, for example injuries at different levels of brachial plexus



9. Lower limb : Bones and Joints

1. Identify bones of pelvic girdle using the skeleton
2. Identify bones and joints of lower limb using plastinated models
3. Identify different movement at joints of lower limb through simulation
4. Describe radiological anatomy of joints of lower limb using radiographic pictures
5. Identify and explain using basic anatomy and pathology the clinical conditions especially problems common in KSA; e.g. osteoarthritis

10. Lower Limb: Hip and Thigh

1. Identify important structures of gluteal region by using plastinated models
2. Identify muscles of all compartments of thigh by using plastinated models and dissection on cadavers
3. Identify boundaries and contents of femoral triangle by dissection on cadavers
4. Identify important surface land marks of thigh by using simulation
5. Identify clinical application. For example femoral hernia, referred pain in knee

Detailed Objectives for Practicals: Movement and Control

11. Lower Limb: Leg and Knee

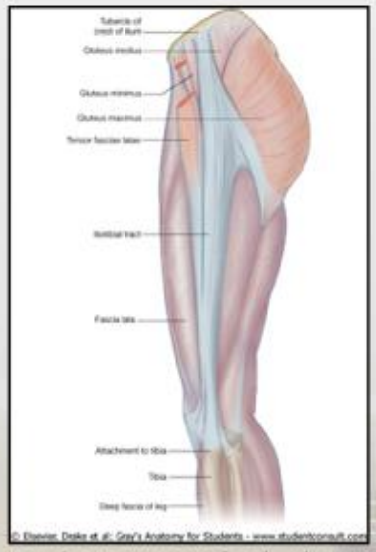
1. Identify the important structures of knee joint using plastinated models
2. Describe the various movements around knee joint using simulation
3. Explain locking and unlocking of knee joint using simulation
4. Identify the important structures of the leg using simulation
5. Identify and explain the anatomical basis of the clinical conditions (e.g. meniscal injury of knee, condylar fractures and other soft tissue injuries) using models
6. Identify important surface land marks using simulation
7. Describe radiological anatomy of the knee joint

12. Lower Limb: Ankle and Foot

1. Identify important structures of ankle like retinaculum, structure passing below it using plastinated models and dissected cadavers
2. Describe the important joints of foot and ankle using plastinated models and skeleton and dissection
3. Explain the important structures of foot like arches, ligament and other soft tissue using plastinated models and simulation
4. Describe surface land marks with simulation
5. Describe radiological anatomy of foot and ankle
6. Identify clinical applications related to ankle and foot (e.g. flat foot, club foot), using videos/models

13. Lower Limb: Muscles

1. Identify different groups of muscles of the lower limb using plastinated models and dissection on cadavers
2. Identify different actions of muscles of the lower limb using simulation
3. Identify surface land marks of different important tendons using simulation
4. Identify different muscles using dissection videos
5. Identify clinical applications related to lower limb, using videos/models



14. Development of Limbs and Vertebral Column

1. Identify various stages of development of limbs using videos
2. Describe the development of vertebrae using videos and models
3. Identify and explain using the knowledge of developmental anatomy, the important clinical applications (e.g. important developmental anomalies of vertebrae and limbs with correlation to the neural tube defects), with the aid of models/videos

Detailed Objectives for Practicals: Movement and Control

RESOURCES:

1. Cunningham's Manual of Practical Anatomy: Volume 1. Upper and Lower Limbs: Upper and Lower Limbs Vol 1
2. Atlas of Human Anatomy: Frank H. Netters, 5th edition
3. http://anatomyguy.com/path-tracing-vessels-and-nerves-of-the-upper-limb/
4. http://anatomyguy.com/medial-thigh/

Detailed Objectives for Clinical skills

Theme I: Introduction to Musculoskeletal system

At the end of session student should be able to:

1. Introduction to Musculoskeletal System

1. Describe Appendicular and axial skeleton in practical by using the skeleton
2. Identify basic terminology by showing video related to topic
3. Identify tendon, ligament and burse on simulation
4. Identify clinical application in shown videos

2. Organization of Somatic Nervous System, Spinal Nerve and Reflex Arc

1. Describe various components of somatic nervous system in practical by using the models
2. Explain all components of typical spinal nerve in practical by using the models
3. Explain reflex arc by showing video

Tutors emails

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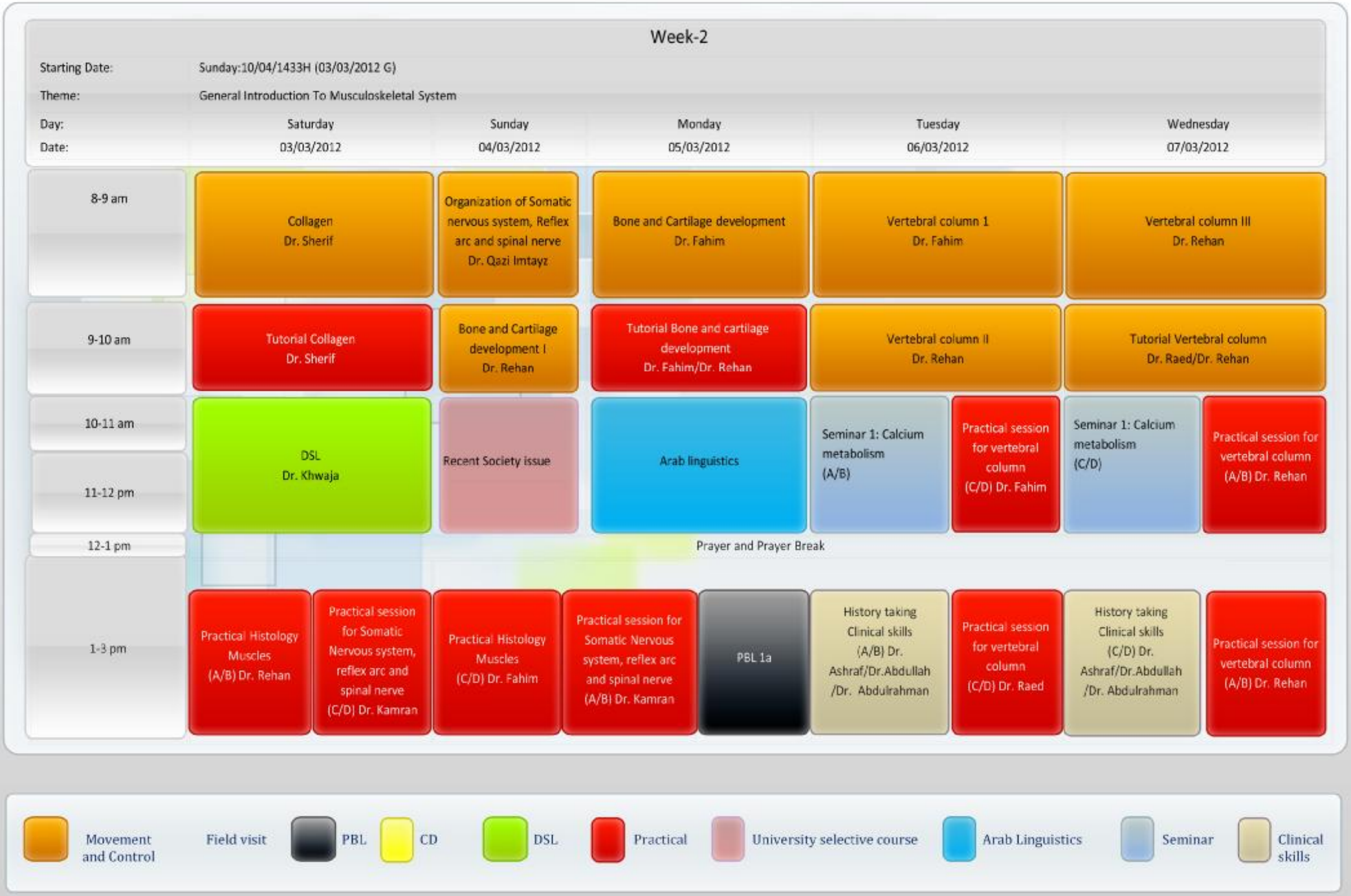
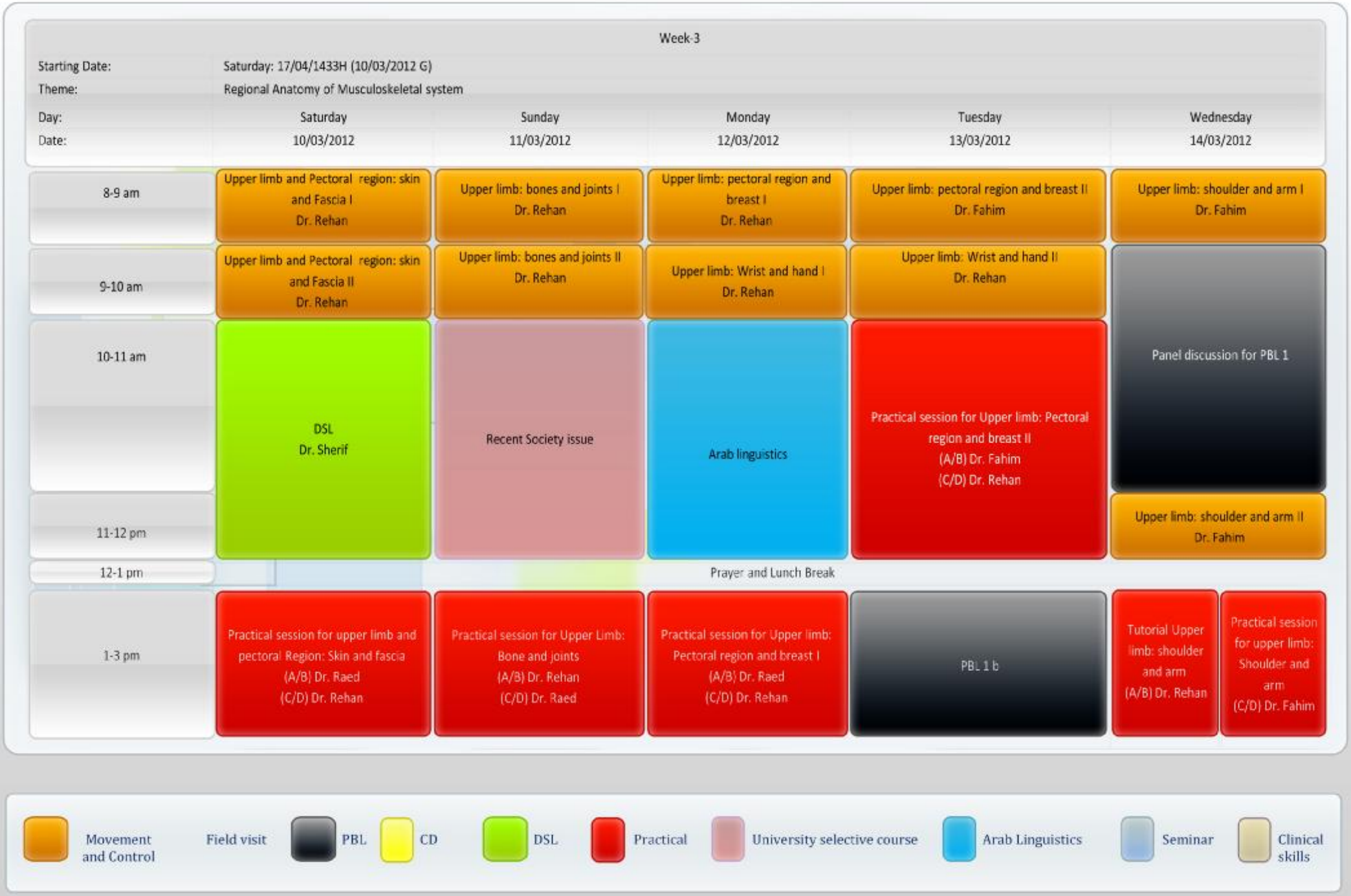
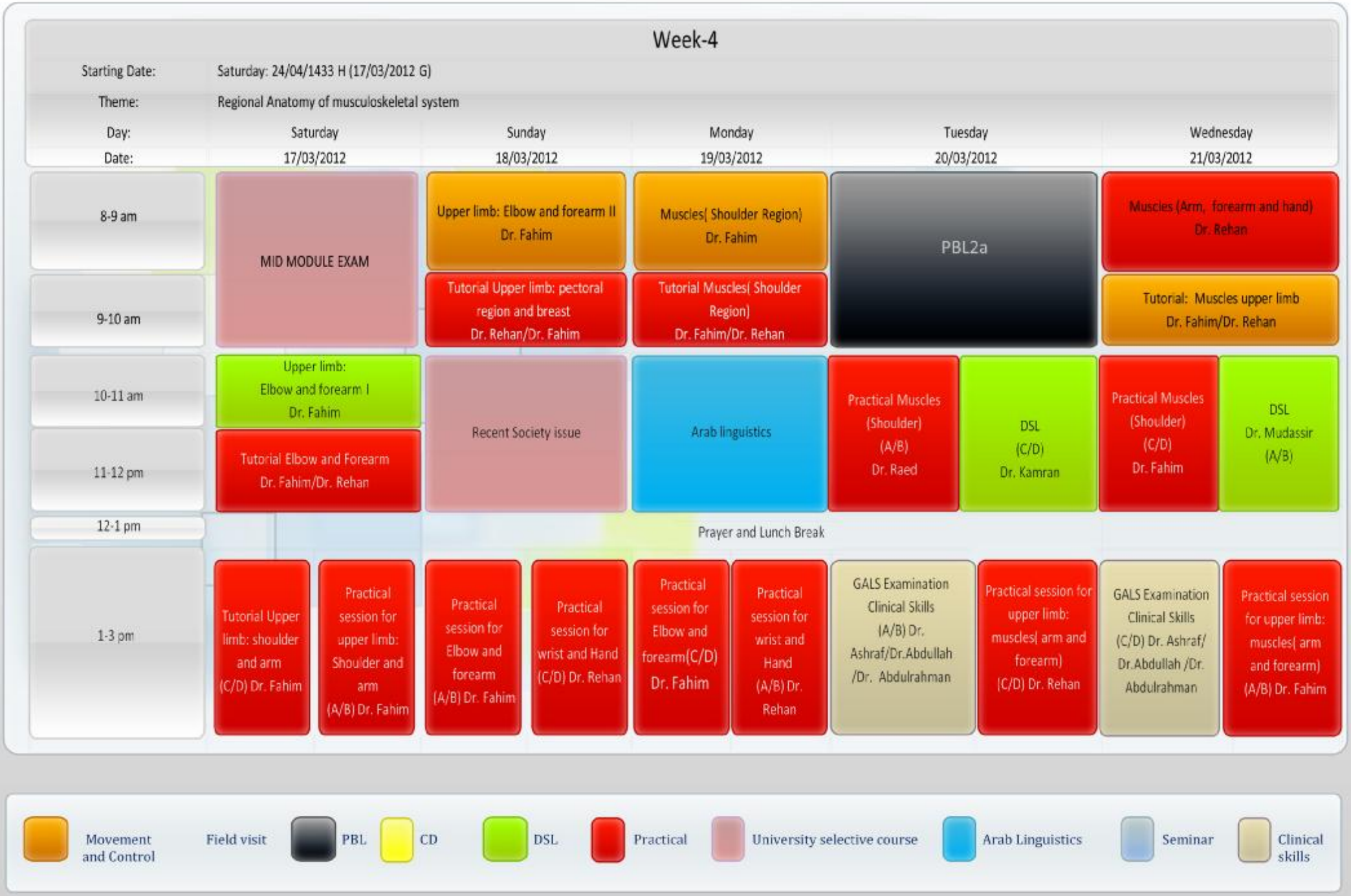
Week-1

Starting Date:	Tuesday 06/04/1433H (28/02/2012 G)				
Theme:	General introduction to musculoskeletal system				
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday
Date:	25/02/2012	26/02/2012	27/02/2012	28/02/2012	29/02/2012
8-9 am				Introduction to musculoskeletal system I Dr. Rehan	Introduction to musculoskeletal system II Dr. Rehan
9-10 am				Glycogen metabolism and glycogen storage diseases Dr. Sherif	Glycolysis of skeletal muscles Dr. Sherif
10-11 am				DSL Dr. Kamran	Contraction of skeletal muscles Dr. Kamran
11-12 pm					Tutorial Contraction of skeletal muscle (A/B) Dr. Kamran (C/D) Dr. Qazi
1-3 pm				Practical session for introduction to musculoskeletal system (A/B) Dr. Rehan Tutorial session for glycogen metabolism (C/D) Dr. Sherif	Practical session for introduction to musculoskeletal system (C/D) Dr. Rehan Tutorial session for glycogen metabolism (A/B) Dr. Sherif

Movement and Control | Field visit | PBL | CD | DSL | Practical | University selective course | Arab Linguistics | Seminar | Clinical skills







01/05/1433 H (24/03/2012G)

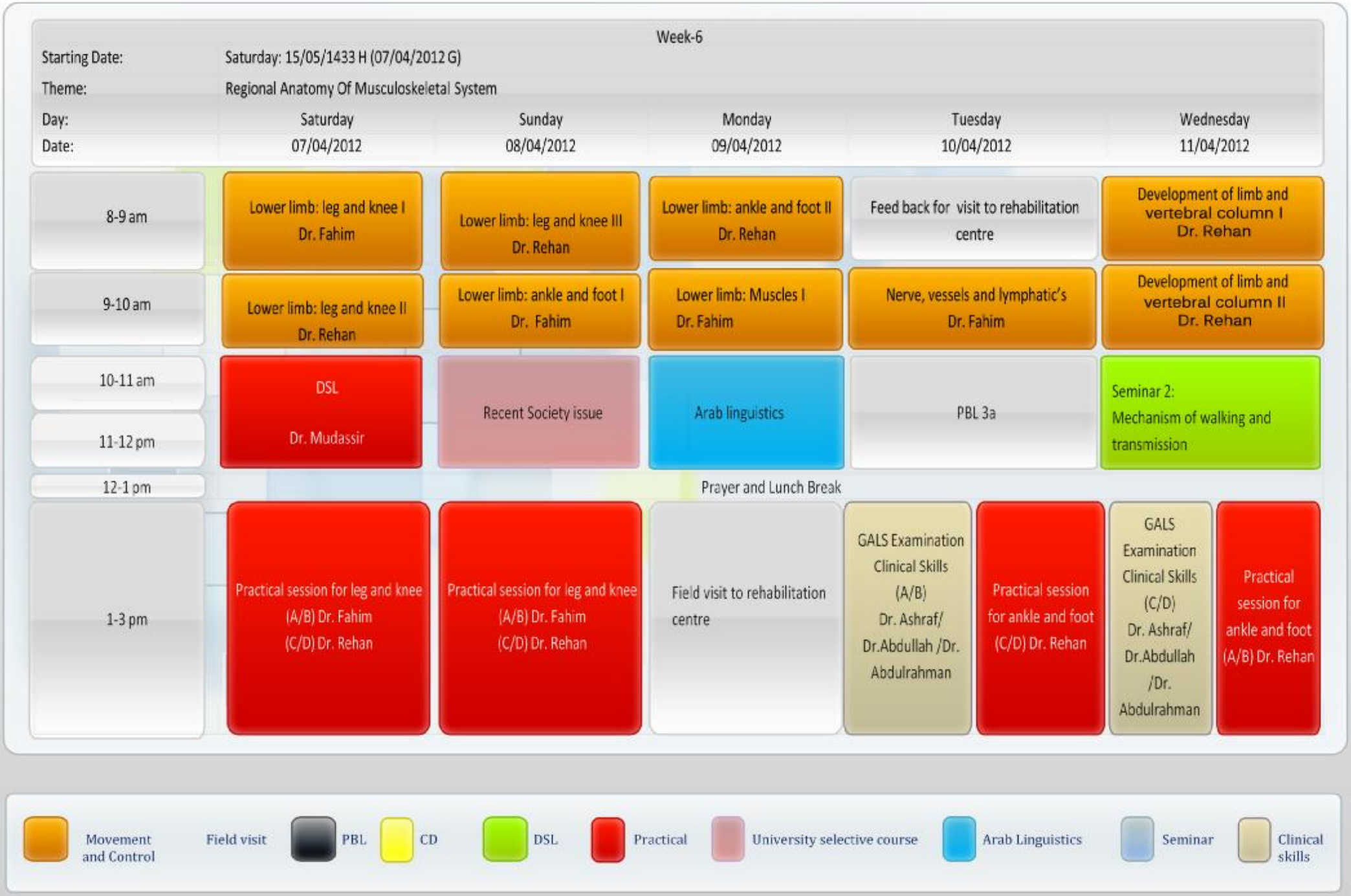
Vacations from 24/03/2012 to 30/03/2012

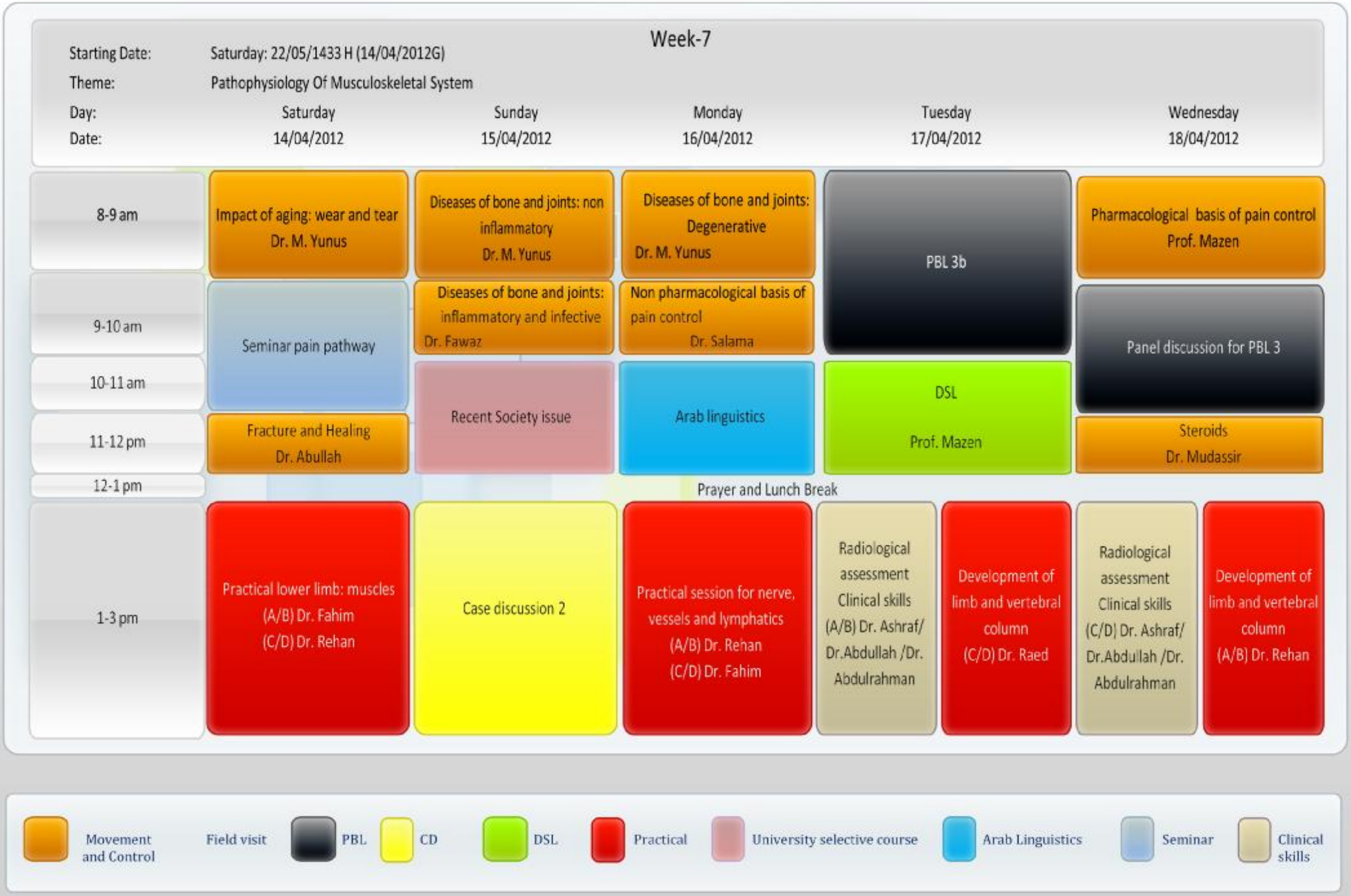
MID SECOND SEMESTER BREAK

Week-5

Starting Date:	Saturday: 08/05/1433 H (31/03/2012G)				
Theme:	Regional Anatomy Of Musculoskeletal System				
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday
Date:	31/03/2012	01/04/2012	02/04/2012	03/04/2012	04/04/2012
8-9 am	Nerve, vessels and lymphatic's DR.Fahim	Lower limb: hip and Thigh I Dr. Fahim	Lower limb: Bones and joints II Dr. Rehan	Lower limb: hip and Thigh II Dr. Rehan	Panel discussion for PBL 2b
9-10 am	Upper range and fineness of motion Dr. Rehan	Lower limb: Bones and joints I Dr. Fahim	Feedback Visit to king Khalid hospital	Lower limb: hip and Thigh III Dr.Fahim	
10-11 am	Practical Nerve, vessels and lymphatic's A/B) Dr. Rehan (C/D) Dr. Fahim	Recent Society issue	Arab linguistics	DSL (A/B) Dr. Rehan	Practical Lower limb: hip and Thigh II (C/D) Dr. Rehan
11-12 pm					DSL (C/D) Dr. Kamran / Practical Lower limb: hip and Thigh II (A/B) Dr. Rehan
12-1 pm	Prayer and Lunch Break				
1-3 pm	Visit to king Khalid hospital	Practical Lower limb: Bones and joints (A/B) Dr. Rehan / Practical Lower limb: hip and Thig I (C/D) Dr. Fahim	Practical Lower limb: Bones and joints (C/D) Dr. Fahim / Practical Lower limb: hip and Thigh I (A/B) Dr. Rehan	PBL 2 B	Case discussion 1

Movement and Control | Field visit | PBL | CD | DSL | Practical | University selective course | Arab Linguistics | Seminar | Clinical skills





Week-8

Starting Date:	Saturday: 01/05/1433 H (21/04/2012 G)				
Theme:	Revision and Examination				
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday
Date:	21/04/2012	22/04/2012	23/04/2012	24/04/2012	25/04/2012
8-9 am	REVISION	FINAL EXAM	FINAL EXAM		
9-10 am					
10-11 am					
11-12 pm					
12-1 pm					
1-3 pm					

Movement and control Module

(Academic Year: 1432-1433)

FACULTY PARTICIPATION IN SEMINARS, PBL, CD and FIELD VISIT

Faculty Member	PBL-1 a MON 05 Mar	CD-1 WED 04 Apr	PBL-1 b TUE 13 Mar	PBL-1 Panel WED 14 Mar	Sem -1 WED 06 Mar	Sem -1 WED 07 Mar	PBL-2 a Tues 20 Mar	CD -2 SUN 15 Apr	Sem -2 WED 11 Apr	PBL-2 b TUE 3 Apr	PBL-2 Panel WED 4 Apr	PBL-3 a TUE 10 Apr	Field Visit HOSP Sat 31 Mar	PBL-3 b TUE 17 Apr	PBL-3 Panel WED 18 Apr	Sem-3 WED 17 Apr	Field Visit REHAB CENTRE MON 09 Apr
Dr.Khwaja	A	A	A	ALL							ALL				ALL	B	
Prof. Mazen					A		B			B	ALL				ALL		
Dr. Qazi	C	B	C	ALL							ALL				ALL	A	C/D
Prof. Wahengbam		C		ALL					A		ALL	B	A/B	B	ALL		
Dr. Sherif	D		D	ALL	B			C			ALL				ALL		
Dr. Ashraf		D		ALL			C		B	C	ALL		C/D		ALL		
Dr. Rehan	B		B	ALL		C					ALL				ALL		A/B
Dr. Fawaz						D		D			ALL	A		A	ALL		
Dr.Mudassir							D	A		D					ALL	C	
Dr. Kamran							A			A					ALL	D	
Dr. Yunus								B	D			C		C	ALL		
Dr. Fahim									C			D		D	ALL		

Teaching and Learning Methods

This section provides an elaboration of the teaching and learning methods that will be used to deliver this block. Thus, there will be a detailed description and a step-wise guide as to how the about the following methods should be applied will be given below.

A. Interactive lectures
B.Small group learning sessions (PBL)
C.Large group learning sessions (seminars)
D. Practical sessions
E.Skills lab sessions
F.Clinical teaching and learning sessions

A. Interactive lectures:

Introduction:
Interactive lectures are similar to the lectures used in all other parts of the curriculum, or anywhere else. They are, however, not the didactic lectures used in the past.

Process:
The lecturer will involve the students in active discussion, and may provide brief learning activities during the lecture to achieve the learning objectives stated under each topic. Occasionally, there will be more than one lecture/lecturer to achieve all the learning objectives given under one topic. As much as possible, where applicable, the lectures will highlight clinical application of the content material. Students could take notes during a lecture, but the lecture slides will be available on Blackboard (i.e., the learning management system of the university).

B.Problem-Bases Learning (PBL)

Introduction:
These are activities where students are divided in a small group of about 10 under the supervision of a tutor/facilitator. One of the important methods of small group learning is PBL, where the students first will be trained how to work in a PBL.

Process:
A detailed guide as to how a PBL is conducted provided separately. Please go through this guide, carefully before taking on PBL learning.

C.Large group learning sessions (seminars):

Introduction:
In this method students will prepare for a relevant topic on a given 'curriculum facet'. The curriculum facet for discussion will be selected by the tutor. The topics related to a given curriculum facet could be either selected by the tutor or by the student, but pre-agreed with the tutor. The student will prepare for a 30-minute presentation on the topic and deliver it to the whole batch. There will be at approximately one large group learning session every two to three weeks.

Process:

1. Tutor selects a curriculum facet relevant to the module/theme that is being learned at that time.
2. Tutor asks for three student volunteers who are willing to prepare for three, 30-minute presentations.
3. The three volunteer students will discuss with the tutor and agree on three topics under a given curriculum facet. These topics will be either selected by the tutor or selected by the students with the concurrence of the tutor.
4. For a given learning session, 2 hours in duration, three students will deliver three, 30-minute presentations on a particular theme, selected by the tutor. After each 30-minute presentation there will be a 10-minute discussion.
5. Finally, the tutor will summarize the presentations of the session in the last 10 minutes.

D. Practical sessions:

Introduction:

Practical sessions are designed to practically illustrate the concepts and principles introduced to the student in the lectures. Thus, the practical's will provide an opportunity for the students to acquire hands-on experience on an abstract concept or a principle they learned in the lectures; i.e. the students will experience for themselves how an abstract concept or a principle practically operates. Every theme that is studied within each module will have several practical sessions.

These practical's will range from demonstration of plastinated models to the dissection of cadavers. The topics of the practical sessions will be determined by the tutor as appropriate. A practical will be held for 2 hours in the newly built 'system-based laboratories' under the guidance of a tutor. Depending on the nature of the subject matter taught within a module, a given module may or may not contain practical sessions.

Process:

1. Tutors who teach in a particular theme, in collaboration with each other will determine an appropriate number of practical's for a given theme.
2. Objectives of a given practical session will be developed and given to the students by the tutor before the practical.
3. Students will be pre-informed about a given practical topic. Depending on the type of practical and facilities available, 25 to 50 students will take part in a given practical session.
4. Students will record findings of the practical in a separate Practical Record Book.
5. At the end of the session the tutor will summarize the main learning points illustrated during the practical.

E. Skills lab sessions:

Introduction:

Students will use the newly built, state-of-the-art skills lab to train the students in certain important practical, clinical skills from year 2; i.e., phase 2. An example for a skills lab session would be blood pressure measurement. Depending on the nature of the module, there may or may not be skills lab sessions for a given module.

Process

1. The tutors who teach within a module in collaboration with each other will determine the number of skills lab sessions per module.
2. The tutors will then draw up the objectives for each session and inform the students about the objectives of the session prior to the skills lab session.
3. Depending on the nature of the skills lab session, students will either participate in small groups or as the whole batch. For example, for blood pressure measurement they will measure the blood pressure of each other in small groups.
4. Depending on the skill, the students will perform the skill either on themselves, on each other or on a simulator.
5. The students will record the findings of the skills lab session in a separate Skills Lab Record Book.
6. The tutor will at the end of the session summarize the main learning points.

F. Clinical teaching and learning sessions:

Introduction

Where relevant the students in small groups of 10, will visit a clinical setting (e.g., a ward, a clinic, or a surgical theatre, central sterilization unit) observe (e.g., observing the sterilization process in the central sterilization unit of the hospital) or experience (e.g., speaking with a patient who has a disease related to smoking) how a given concept or principle is clinically applied. Depending on the nature of the subject matter being taught, there may or may not be clinical teaching and learning sessions within a given module.

Process

1. The tutors responsible for teaching and learning for a given module will determine the topics for which there will be clinical teaching and learning sessions
2. The tutors will then draw up the objectives of a given session and communicate it to the student prior to the session.
3. The students will be divided into groups of 10.
4. A tutor will accompany the students to the clinical setting or a clinician (who is aware of the objectives of the session) from the relevant clinical setting will be assigned to show the students the relevant procedures that they need to observe or do.
5. Students will record their experience or observations in a 'Clinical Teaching and Learning Record Book'.

Assessment of the Module

This module comprises two types of assessment

A. Continuous assessment:

- These assessments will take place throughout the course.
- They are mostly based the PBL sessions, skill lab, practical and clinical activities.
- Also there will be MCQ as mid module examination.
- A proportion of marks (40%) from these assessments will contribute to the final summative module assessment.

B.Final assessment:

- The eligibility criterion for sitting the final examination will be the completion of 75% of attendance.
- This exam is held the end of the module assessment, and will be held under formal examination conditions, including MCQ, OSPE, OSCE and so forth.
- A proportion of marks (60%) from this assessment will contribute to the final summative mark of the module assessment

Quality Assurance and Evaluation Process

Any new course, or for that matter any old course, needs constant reviewing and monitoring to ensure that it meets the demands placed on it by the overall curriculum. This curriculum is no exception. Hence, there will be a number of evaluation strategies employed by the module.

They are as follows:

1. Student feedback at the end of the module, seeking student comments on both teaching and learning, and assessment, along with views on the general course organization and implementation
2. Student feedback of a sample of teaching and learning activities
3. Tutor feedback
4. Examiner feedback
5. Peer evaluation, where a staff member may visit a particular teaching and learning activity and provide formative feedback about its conduct
6. Analysis of the students' examination results
7. External review

GALS Examination

Musculoskeletal Examination (GALS)

1. Introduction and orientation; name, role and consent
2. Develop rapport (and wash hands?)
3. Ask 3 questions:
a. Do you have any pain or stiffness in your muscles, joints or back?
b. Can you dress yourself completely without any difficulty?
c. Can you walk up and down stairs with out any difficulty?
4. Appropriately expose the patient (to their underpants) –watch to see which movements are difficult / avoided
5. General inspection
a. Surroundings –walking stick.
b. General appearance –colour, pain, edema, body mass

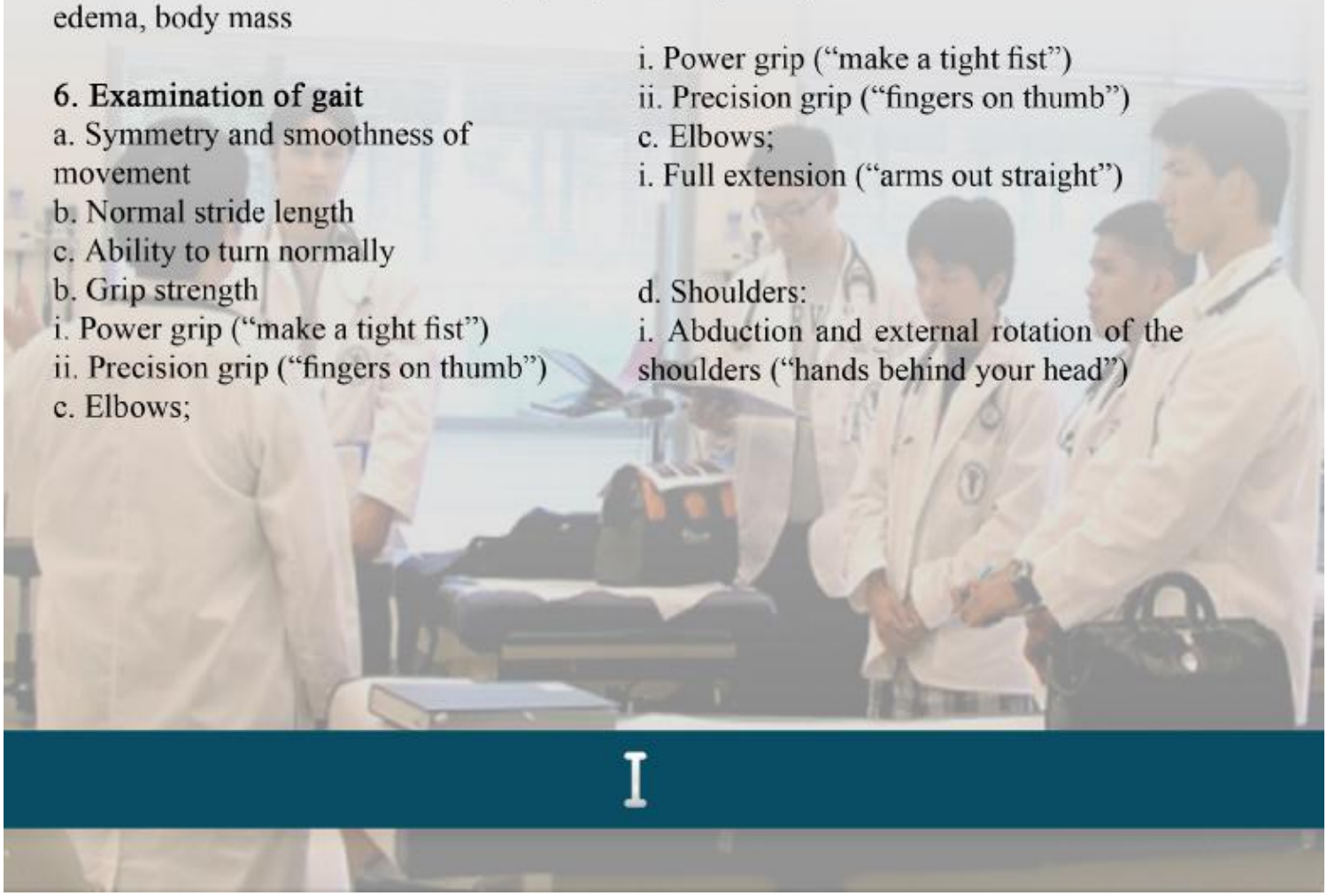
6. Examination of gait
a. Symmetry and smoothness of movement
b. Normal stride length
c. Ability to turn normally
b. Grip strength
i. Power grip ("make a tight fist")
ii. Precision grip ("fingers on thumb")
c. Elbows;

7. Examination of the arms
a. Hands
i. Inspect / palpate for wrist / finger swelling deformity
ii. Squeeze across 2nd-5th metacarpals (tenderness indicates synovitis of metacarpophalangeal joints)
iii. Turn hands over (inspect for muscle wasting, normal supination / pronation forearm?)
iv. Extend wrists (put hands together palm-to-palm)
v. Flex wrists (reflected prayer position. Phalen's test, -forced flexion for 60s reproduces patient's symptoms of carpal tunnel syndrome)

b. Grip strength

i. Power grip ("make a tight fist")
ii. Precision grip ("fingers on thumb")
c. Elbows;
i. Full extension ("arms out straight")

d. Shoulders:
i. Abduction and external rotation of the shoulders ("hands behind your head")



8. Examination of the legs

a. Knees:

i. Inspect for knee swelling / deformity and quadriceps muscle bulk

ii. Check for knee effusion (swipe test – patellar tap)

iii. Check for knee crepitus while passively flexing knee

b. Hips:

i. Do you have a hip replacement?

ii. Check internal rotation of hips

c. Feet:

i. Squeeze across metatarsals (tenderness indicates synovitis of metatarsophalyngeal joints)

ii. Inspect for callosities on sole of feet

9. Examination of the spine (standing)

a. Inspection from behind

i. Scoliosis

ii. Symmetrical muscle bulk

iii. Level iliac crest

iv. No popliteal swelling

v. Normal hindfoot alignment

vi. Valgus

b. Trigger point tenderness:

i. Pressure over mid supraspinatus (fibromyalgia)

c. Inspection from the side

i. Kyphosis?

ii. Normal flexion ("touch toes") –put fingers on 2 adj. vertebrae to see if move apart – tests flexion from spine as well as hips

d. Inspection from in front

i. Normal cervical lateral flexion ("touch your ear on your shoulder")

10. End pieces

a. Perform a regional examination (REMS) if necessary

b. Neuro exam

11. Wash hands

12. Write up findings in the notes and discuss findings/next step with patient

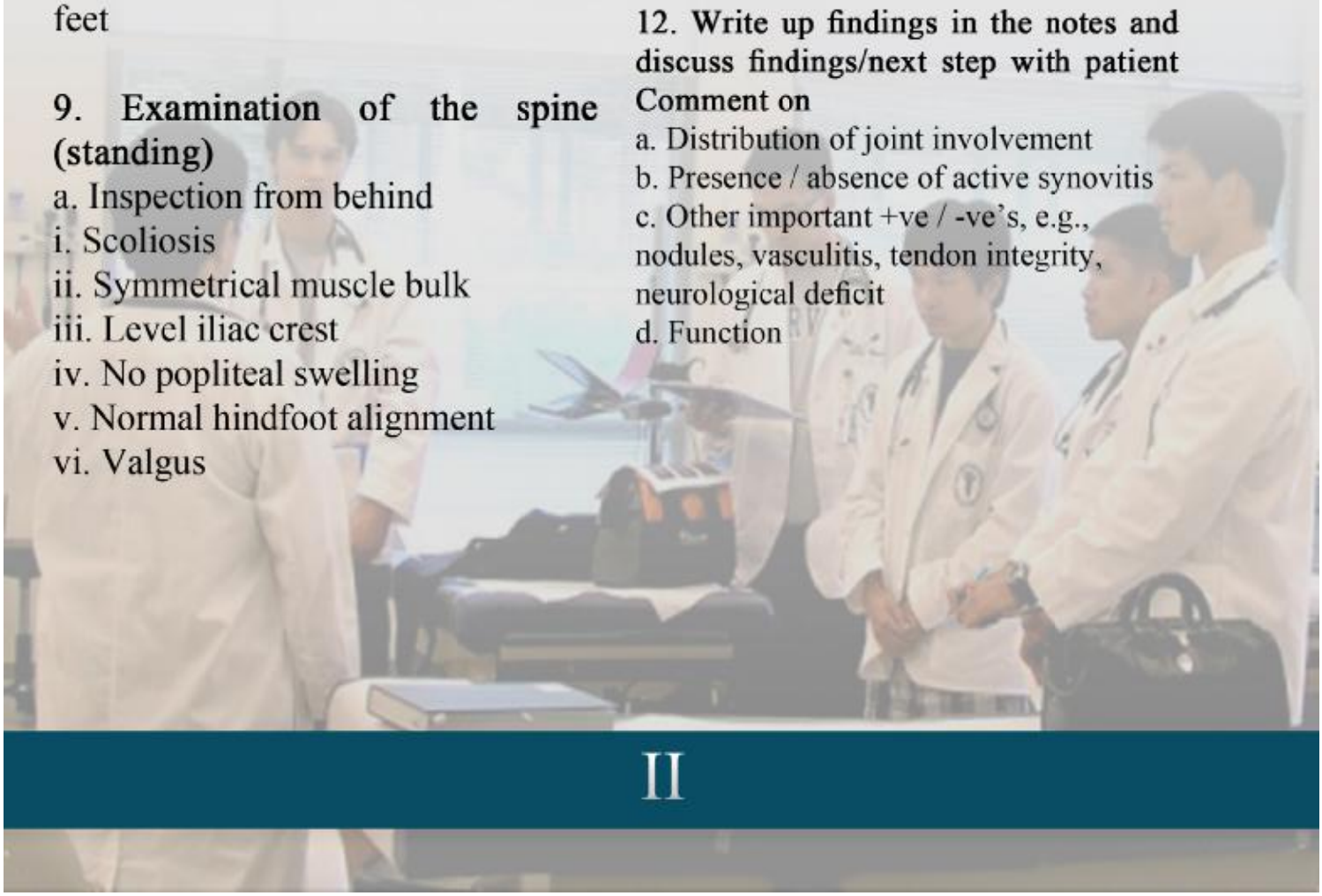
Comment on

a. Distribution of joint involvement

b. Presence / absence of active synovitis

c. Other important +ve / -ve's, e.g., nodules, vasculitis, tendon integrity, neurological deficit

d. Function



GALS Examination

REMS (general principles):

• Introduction:
o Introduce yourself
o Gain verbal consent to examine

• Look for:
o Scars
o Swellings
o Rashes
o Muscle wasting

• Feel for:
o Temperature
o Swellings
o Tenderness

• Move:
o Full range of movement –active and passive.
o Restriction –mild, moderate or severe?

• Function:
o Functional assessment of joint

*REMS (Regional examination)