COURSE SPECIFICATION

Title: Locomotor Module

[Code: LMS-122]

2023-2024

Module specification

Benha University.
Benha faculty of Medicine.

1. **Program(s)on which the module given:** Bachelor of Medicine and Surgery M.B.B. Ch (integrated program).
2. **Module title:** Locomotor Module.
3. **Departments offering the module:** the staff members of Anatomy& Embryology, Biochemistry, Physiology, Histology, Pathology, Pharmacology, Parasitology Microbiology & Immunology.
4. **Academic year:** 1st year

Date of specification approval:
Faculty Council: No 420 Date 16\9\2023

A. Basic information

1. **Module title: Locomotor**
2. **Module code: LMS-122**
3. **Module coordinator: Marian Victor**
4. **No. of hours: 6 credit hours**
5. **Lecturers: 33 hours**
6. **Tutorial: 16 hours**
7. **Case based study: 4 hours**
8. **Self learning: 2 hours**
9. **Total: 89 hours**

B- Professional Information:

1- The Overall Aims of the module are:

To provide the undergraduate students with basic scientific **knowledge** that enable them to understand the basic normal structure, function, and pathological conditions of the locomotor system.

To provide essential practical and clinical **skills** necessary for conduct a physical examination of the locomotor system.

To provide the undergraduate students with basic **ethical, professional and communication skills and attitude** essential to behave ethically with his teachers, colleagues as well as other personnel in the field and collaborate with his colleagues in a team work**.**

2- Competencies

Competency Area I of program: The graduate as a health care provider

1.9. Retrieve and Manage the updated biomedical information by all means, including electronic sources to remain current with advances in knowledge and evidence based medicine (EBM).

1.9.1. Identify the terminology of the locomotor system

1.9.2. Identify the L/M structure of Hyaline cartilage, Yellow elastic cartilage, White fibro-cartilage, Compact bone, Spongy bone and Growing bone.
1.9.3. Discuss the electron micrograph of hyaline cartilage, yellow elastic cartilage, white fibro-cartilage, compact bone, spongy bone and growing bone.
1.9.4 Study the LM structure and the electron micrograph of the organization and types of skeletal muscle.

Competency Area II of program: The graduate as a health promoter

2.9 Adopt suitable measures for infection control.

2.9.1 Describe necrotizing fasciitis and gas gangrene as an example of bacterial infection of fascia and muscles and their preventive roles.
2.9.2 Describe parasitic infection of muscles and deep fungal infection.
2.9.3 Explain different trends used in diagnosis of parasites affecting locomotor system.

Competency Area III of program: The graduate as a professional

3.1. Exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, integrity, commitment, compassion, and respect.
3.1.1. Communicate clearly, sensitively and effectively with injured patients and their relatives, colleagues and also with his staff.
3.1.2. Exhibit appropriate professional behaviors and relationships in all aspects of practice.
3.1.3. Develop oneself by gain and apply inter-professional skills.

Competency Area IV of program: The graduate as a scholar and scientist

4.1 describe the normal structure of the body and its major organ systems and explain their function
4.1.1.list muscles of upper limb, lower limb , ,anterior and posterior wall of abdomen and identify the attachments, action, and nerve & blood supply of each muscle.
4.1.2. Outline brachial and sacral plexuses.
4.1.3. Demonstrate the different internal structures (muscles, tendons, vessels, nerves and the surface markings) of upper limb, lower limb, anterior and posterior wall of abdomen in human cadavers.
4.1.4. Recognize the joints of upper limb and, lower limbs and define their structures, movements, and locate them.
4.1.5. Describe the physiologic properties of muscle tissue (fast and slow fibers) and its basic element and the motor unit, nerve action potential and its propagation.
4.1.6. Diagram simple muscle twitch (S.M.T) & explain how the frequency of stimulation affects S.M.T.
4.2 Explain the molecular, biochemical, and cellular mechanisms that are important in maintaining the body's homeostasis.
4.2.1.1list the role of membrane phospholipids in generating inflammatory mediators and mechanism of action of cyclooxygenase.
4.2.2.Enumerate proteins of the bone, muscle, and tendons and describe functions of proteoglycans and structure proteins of the locomotor system and the different sources of energy for muscle contraction.
4.2.3.Explain on biochemical basis the metabolic changes related to metabolic bone diseases and various myopathies.

4.5 Identify various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of illness/disease and explain the ways in which they operate on the body (pathogenesis).

4.5.1. List and define the inflammatory conditions affecting joints and describe etiological factors and pathological sequence of events in disease like osteoarthritis, gout, and T.B. arthritis.

4.6 Describe altered structure and function of the body and its major organ systems that are seen in various diseases and conditions.

4.6.1. Identify the nerve injures of upper and lower limb and the applied anatomy of locomotor system.

4.6.2. Describe the effects of aging and dysfunction of the locomotor system and muscle disorders (muscular dystrophy, myasthenia gravis)

4.6.3. Write a pathological request concerning main features of gross appearance of soft tissue tumors.

4.7 Describe drug actions: therapeutics and pharmacokinetics; side effects and interactions, including multiple treatments, long term conditions and non-prescribed medication; and effects on the population.

4.7.1. Observe the effect of neuromuscular blocking drugs (N.M.B) on skeletal muscle contraction and identify receptors which they act on.

4.7.2. State the drugs used in treatment of common locomotor diseases and describe their mechanism of action, pharmacokinetics, pharmacological actions, side effects and drug interaction.

4.8. Demonstrate basic sciences specific practical skills and procedures relevant to future practice, recognizing their scientific basis, and interpret common diagnostic modalities, including: imaging, electrocardiograms, laboratory assays, pathologic studies, and functional assessment tests.

4.8.1. Provide the student with practical skills associated with the dissection of Locomotor system of the cadaver and the examination of the living.

4.8.2. Recognize the predisposing factors & diagnostic methods and classification of tumors and tumor like condition of bone and soft tissues.

4.8.3. Examine and identify microscopic findings of some selected examples of inflammatory bone diseases and soft tissue tumors.

4.8.4. Summarize the pathological features and complications of bone of infection, hereditary disease of collagen .

Competency Area V of program:The graduate as a member of the health team and system

5.3. Implement strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports collaborative work.

5.3.1. Work collaboratively in a team with other colleagues to maximize benefits.

5.3.2. utilize and respect the different cultural believes and values in the community they learn.

Competency Area VI of program:The graduate as a lifelong learner and researcher

6.1. Regularly reflection and assess his/her performance using various performance indicators and information sources.

6.1.1. Consider the information resources including the available electronic facilities to update knowledge and to manage and manipulate information.

6.1.2. Establish life-long self-learning required for continuous professional development through using the sources of medical information and communication technology to remain in current with advances in knowledge and practice.

6.2. Develop, implement, monitor, and revise a personal learning plan to enhance professional practice.

6.2.1. Engage and revise personal learning plan to improve professional practice.

6.2.2 Assimilate and integrate information from lectures, practical sessions, tutorials presentation sessions and independent learning activities.

3. Module Contents:

Topic	Lectures (No.33 (52.%)	Practical (No.17 of (26.6%)	Students Activities			Total (each topic)
			Tutorial (No.8) (8%)	CBL (No.2) (10.6 %)	SDL (No.1) (2.6 %)	
1.Anatomical study of upper and lower limb (muscles ,vessels, nerves, &joints) &abdominal muscle wall and brachial and sacral plexuses and manifestation of nerve injuries	13 (39%)	10 (18.6 %)	2 (6 %)	2 (2 .6%)	1 (2.6%)	**20**
2. Histological features of muscle ,bone and cartilage	3 (9%)	1 (1.3 %)	-	-	-	**6**
3. - Structure of the end-plate , Muscle action potential and excitation	3 (9%)	1 (1.3 %)	-	-	-	6
4.Biochemical Composition of Muscle., fibrous proteins in connective tissues, and metabolic bone diseas.	3 (9%)		1 (1.3 %)			**6**
5.Pathlogical features of diseases of bone, muscle and joints including tumors	5 (15%)	3 (4%)	2 (2.6 %)	-	-	10
6. Miscellaneous parasites and bacterial infection of locomotor system	1 (3%)	-	1 (1.3 %)		-	**3**
7. pharmacology basis and Therapeutics drugs of locomotor disorder and Drugs used to increase calcium deposition in the bone	3 (9 %)	1 (2.6 %)	1	-	-	**6**

8- Diagnosis of locomotor infections	1 (3%)	1	1			**3**
Total	33	17	8	2	1	**60**

4- Teaching and Learning Methods:

1. **Modified Lectures**: A modified lecture format, generally presented in a manner of interaction between students and the lecturers, is now commonly presented as video or any aiding materials.
2. **Practical sessions**.
3. **Tutorials,** Small Group Tutorials on special topics will be organized for the purposes of enhancing the students' general knowledge and overall understanding. It allows students to apply newly acquired knowledge and it is suitable for higher order cognitive objectives.
4. **Case Based Learning (CBL)**: Clinical Presentations will be organized as a series of multi-disciplinary sessions of small-group teaching led by staff from the appropriate Clinical Departments. These sessions also provide an opportunity for students to see patient-doctor interaction and the personal and social effects of illness. Satisfactory attendance and performance in practical classes and at clinical sessions are part of the final assessment at such level.
5. **Self-Directed Learning(SDL)**: The SDL sessions will promote self-directed learning and thus, time will be available for further study by the students using all available- learning resources including electronic learning materials.

Method	Evidence	ILOs
Modified lectures	CDs of lectures including (video films, brain storming, problem solving, etc.…)	Competency area I : The graduate as a health care provider **1.9.1** Competency area II: The graduate as a health promoter **2.1.1** Competency area Ill: The graduate as a professional **3.1.1, 3.1.2 3.1.3** Competency area IV: The graduate as a scholar & a scientist **, 4.2.1, 4.2.2, 4.2.3** **4,5.1** **4.7.1,4.7.2** Competency area V: The graduate as a member of the health team and a part of the health care system **5.1.1,5.2.1** ▪ Competency area VI: The graduate as a lifelong learner and researcher **6.1.1,6.1.2**
Case oriented learning	Samples of student activities	
Directed self-learning	Samples of student activities	

Practical sessions	• Available videos on the platform • Logbook for attendance • Anatomic specimen jars microscopic slides for bone, cartilage, muscle, tumors, inflammation of tissues) pathological specimen • **المشرحه والمعامل الهستولوجي والباثولوجي والفسيولوجي والفارما و الميكرو**	Competency area I : The graduate as a health care provider **1.9.2,1.9.3,1.9.4** Competency area IV: The graduate as a scholar & a scientist 4.1.6, 4.6.3 **4.8.1,4.8.2,4.8.3,4.8.4** Competency area VI: The graduate as a lifelong learner and researcher 6.2.1,6.2.2

5- Student Assessment Methods

1-written examination

This type of assessment is used for judgment or decisions to be made about your performance. It serves as:

- Verification of achievement for the student satisfying requirement
- Motivation of the student to maintain or improve performance
- Certification of performance
- Grades

To assess:

- Knowledge & understanding: (
- Intellectual skills:

2-Practical examination: To assess:

- Practical skills
- Professional skills & attitude
- General & transferable skills
- In this Course your performance will be assessed according to the following:

1- Weighting System:

- **MCQS Exam :45**
- **ESSAY Exam:15**

Total = 100 % (150 Marks)

Assessment Schedule

- **Written Exams:** will include multiple choice questions (MCQs) , essay questions. These will cover material presented during the lectures, tutorials, CBL presentations, and SDL.

Midmodule will be held at ------- AM of 3nd week of module.

Practical examination: Will be arranged by the departments

Tool	Evidence	Purpose (ILOs)
Written examination: • MCQs • essay questions • Case study.	Attached module of examination.	**To assess: (know & know how levels of millers, pyramid "knowledge, understanding & intellectual skills".** Competency area I : The graduate as a health care provider **1.9.1** Competency area II: The graduate as a health promoter

		2.1.1 Competency area Ill: The graduate as a professional **3.1.1, 3.1.2 3.1.3** Competency area IV: The graduate as a scholar & a scientist **4.2.1, 4.2.2** **4,5.1,4.5.2, 4.5.3,4.5.4** **4.7.1,4.7.2** Competency area V: The graduate as a member of the health team and a part of the health care system **5.1.1,5.2.1** ▪ Competency area VI: The graduate as a lifelong learner and researcher **6.1.1,6.1.2**
Practical	Samples of test exams: Data Show OSPE stations.	**<u>To assess: (show & does levels of miller's pyramid "Practical, clinical, professional skills & attitude").</u>** Competency area I : The graduate as a health care provider **1.9.2,1.9.3,1.9.4** Competency area IV: The graduate as a scholar & a scientist 4.1.6, 4.6.3 **4.8.1,4.8.2,4.8.3,4.8.4**

		Competency area VI: The graduate as a lifelong learner and researcher 6.2.1,6.2.2

Assessment 1 exam (mid module exam) will be held at **Sunday 7-4-2024.**

Assessment 2 exam (final module exam)) will be held at **Sunday 7-7-2024.**

Practical examination: Will be arranged by the departments. **Wednesday 24-4-2024**

Weighting System:

Examination	Marks allocated	% of Total Marks
1-Mid- exam: a- Written (M.C.Q)	**36**	**30 %**
C. - Assignments & other activities (log book)	**9**	
2-End module: Written (M.C.Q) ,essay Q	60 (45) (15)	40 %
Practical & Field training	45	30%
Total	**150**	100%

6- List of References:

VII .Recomended Text Books and References for System Modules

Basic materials:

- Data of lectures power point, pdf (2023).

Essential books (textbooks):

1. Gray's Anatomy for Student (2016): A standard text book by Richard L.Dark,A.WayneVogol and Adam W.M.Michel ,3nd Edition.
2. Last's Anatomy (2012) :Chummy, S.S.: Regional and applied. Pub. Churchill Livingstone, Edinburgh, London, New York. 12th ed.
3. Review of Medical Physiology; 22nd ed.; William F. Ganong., The McGraw-Hill Companies, 2005.
4. Human Physiology from Cell to System; 4th ed.; Lauralee Sherwood, Brooks/Cole Pub. Co. 2003.
5. Textbook of Medical Physiology; 11th ed.; Guyton AC and Hall JE.; Saunders/Elsevier Co.; 2005.
6. Robbins and Cotran: Pathologic basis of disease; 10th edition.
7. General pathology book of pathology department, Benha Faculty of medicine, last edition.
8. Slides and jars books of pathology department, Benha Faculty of medicine, last edition.
9. Goodman and Gilman's pharmacological basis and therapeutics, last edition.
10. Katzung Basic and Clinical Pharmacology; 9th ed., Katzung B., McGraw Hill Medical Company, 2003, Lippincott Illustrated Review: Pharmacology North American edition.
11. ABC of Learning and Teaching in Medicine, Cantillon, P., Hutchinson L. and Wood D., BMJ Publishing Groups Books, 2003.
12. Cell biology & Histology (2017): Gartner L.P. & Hiatt J.L. 7th ed. Wolters Kluwer, Philadelphia, New York, London.
13. Junqueira' s Basic Histology; Text & Atlas (2016): Mescher A. L. 14th ed. McGraw-Hill Education. New York, London, Toronto.
14. Medical Biochemistry, Lippincott Illustrated Review; (2017); 7th ed., Ferrier D. R. Wolters Kluwer, Philadelphia.
15. Harper's Illustrated Biochemistry 31st Edition; (2018); Rodwell V.W., Bender D., Botham K.M., Kennelly P. J. and P. A. Weil, McGraw Hill Medical Education Company.
16. Microbiology, Lippincott Illustrated Review, 3rd ed. (2012); Richard A. Harvey, Cynthia N.Cornelissen, Bruce D. Fisher, McGraw Hill Medical Company.

Periodicals, Web sites, etc:

- http://www.epu-eg.com/
- http://www.parasitesonline.net/
- http://pathmicro.med.sc.edu/book/parasit-sta.htm
- http://www.dpd.cdc.gov/dpdx/HTML/Para_Health.htm
- http://www.pubmed.com.
- http://sciencedirect.com.

7- Facilities Required for Teaching and Learning:

- **Lecture halls**
- **Labs**
- **Audiovisual aids & data show**
- **Benha E- learning center**
- **Faculty library**

Module coordinator: Dr. Marian Victor

Semester Coordinator: Prof.Dr. Maysa

General Supervisor of modules: