

Skin and Locomotor System(111501303)

2024-2025

First semester

Coordinator: Dr. Ashraf Sadek



The Hashemite University



Deanship of Academic Development
and International Outreach



كلية الطب البشري

الجامعة
الهاشمية



عمادة التطوير الأكاديمي
والتواصل الدولي

COURSE INFORMATION

Course Name: Skin and Locomotor System Semester: First Department: Department of Anatomy, Physiology and Biochemistry Faculty: Faculty of Medicine	Course Code: 111501303
Day(s) and Time(s): Sunday to Thursday 9 am to 3,30 pm Classroom: Al-Harith auditorium	Credit Hours: 6 Prerequisites: None

COURSE DESCRIPTION

This integrated course aims to provide the medical student with basic sciences information about bones, joints muscles, tendons, ligaments, skin, and associated soft tissues related to clinical manifestations of diseases of the musculoskeletal system and skin.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom-based discussion
- Collaborative learning through small groups acting in an interdisciplinary context.
- Video lectures

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Other instructors:

Anatomy	
	Dr Mohammed Fathi Mohamed Elrefai Assistant Professor of Human Anatomy & Embryology mohamed@hu.edu.jo Office number: 3014 Phone number: 5604 Office hours: Sunday: 11 am-1 pm & Tuesday: 11 am-1 pm And you are welcome at any time.
	Dr. Amany Mohammed Allam amany@hu.edu.jo office 3015 Sunday 11-1 Wednesday 11-1
	Dr. Mustafa Saad Yousuf MustafaS@hu.edu.jo Office 3019 Phone 5432 Sunday 11:30-12:30 Monday 11:30-12:30 Wednesday 11:30-12:30
Physiology	Dr. Shaimaa Nasr Amin Professor shaimaa@hu.edu.jo Sunday 12-2 pm Tuesday 12-2 pm Thursday 12-2 pm Office 3020
Pathology	Dr.Duaa Faisal Mohammed Abuquiteish Dua@hu.edu.jo Sunday 12-2 pm Tuesday 12-2 pm Thursday 12-2 pm Phone 5406 Office1020

Pharmacology	Dr. Sofian Al Shboul sofian@hu.edu.jo Office 3043 Sunday 10-12 Tuesday 10-12
Microbiology	Dr. Hafez Abedal Wali oqlah Al Momani Hafez@hu.edu.jo ffice3041 Phone 5380 Sunday 2-3 Tuesday 2-3 Thursday 2-3
Biochemistry	Dr. Ahmed Abdel Fattah Ahmed Salem asalem@hu.edu.jo office1019 Sunday 12-2 Thursday 10-11
Community Medicine	Dr. Eman ALKamil Emana_sa@hu.edu.jo Office3034 Sunday 12-1 Monday 12-1 Wednesday 12-1

REFERENCES AND LEARNING RESOURCES**ANATOMY:**

- Principles of Human Anatomy. By G.J. Tortora, Latest edition. -**
Clinical Anatomy for Medical Students. By R.S. Snell, Latest edition. -
Basic Histology, by L. Carlos Junqueira. Latest edition. -
Before we are born. By K.L. Moore and T.V.N. Persaud, Latest edition. -

BIOCHEMISTRY:

- Harper's Biochemistry. By Robert K. Murray and Co., Latest edition.- Supplementary Departmental Handouts.-**

PHYSIOLOGY:

- Textbook of Medical Physiology, by Guyton and Hall- Review of Medical Physiology, by William F. Ganong.**

PATHOLOGY:

- Essential Pathology, by Emanuel Rubin. -**
Basic Pathology, by Kumar, Cotran and Robbin. -

MICROBIOLOGY:

- Medical Microbiology. By John C Sherris.**

PHARMACOLOGY:

- Lippincott's Illustrated Reviews: Pharmacology. -**
Basic and clinical pharmacology, Bertram and Katzung. -

STUDENT LEARNING OUTCOMES MATRIX FOR THE ANATOMY

Core Curriculum Learning Outcomes	Course Objectives	Course Student Learning Outcomes	Assessment Method
	1,2-Obtain knowledge about the histology of the skin	<ol style="list-style-type: none"> 1. Enumerate the cells that are found in the epidermis and describe their main features and functions. 2. List the layers that form the epidermis and describe their main features and functions. 3. Explain the significance of the jigsaw-like epidermal-dermal junction. 4. Describe the parts of the dermis and the main differences between them. 5. Describe the hypodermis. 6. List the different receptors of the skin and describe their features. 7. Understand the features of the hair and its associated structures. 8. Describe the main features of the glands in the skins and identify the differences between them. 9. Describe the nail and its main parts and features. 10. Identify the differences between thick and thin skin. 	MCQ exams
	3-Obtain knowledge about the anatomy of the skull	<ol style="list-style-type: none"> 1. Describe the general features of the skull 2. Describe the features of Norma Frontalis (anterior view) of the skull 3. Describe the features of Norma Vertical (superior view) of the skull 4. Describe the features of Norma Lateralis (lateral view) of the skull 5. Describe the features of Norma Occipitalis (posterior view) of the skull 6. Describe the features of Norma Basalis (inferior view) of the skull 7. Describe the features of cranial cavity (interior) of the skull 	MCQ exams

		8. Describe the internal features of the cranial cap 9. Outline important foramina of the skull	
	4-Obtain knowledge about the anatomy of the mandible and hyoid bone	1. Describe the features of the mandible 2. knowledge of the structures attached and related to the mandible 3. describe the general features of the hyoid bone	MCQ exams
	5-Obtain knowledge about the anatomy of the face and scalp	1. Describe the extension, structure, muscles, blood and nerve supply, and lymph drainage of the face and the scalp 2. Describe the muscles of facial expression; motor and sensory nerve supply; blood supply and lymph drainage of the face	MCQ exams
	6. Obtain an understanding of the anatomy of the infratemporal fossa	1. Describe the muscles of mastication (attachment, nerve supply and action) 2. Describe the extension and content of temporal fossa 3. Describe the extension, connections and content of infratemporal fossa. 4. Illustrate the course, parts and branches of the maxillary artery 5. Describe the location, connections and content of pterygopalatine fossa	MCQ exams
	7. Acquire knowledge about the anatomy of the vertebral column	1. Describe the general features of the vertebral column 4. Describe the features of cervical vertebrae 5. Describe the four types of cervical fascia (investing, carotid, pretracheal & prevertebral)	MCQ exams

	8 Obtain a knowledge of the anatomy of prevertebral muscles	<p>1-Describe and differentiate between the thoracic, lumbar vertebrae and the sacrum</p> <p>2. Illustrate the anterior group of prevertebral muscles</p> <p>3. Illustrate the lateral group of prevertebral muscles</p> <p>4. Illustrate the muscles of the back of the neck</p> <p>5. Illustrate the boundaries and the content of sub-occipital Triangle</p> <p>6. Describe the cervical vertebra joints(atlantooccipital, atlantoaxial, boundaries and the content of sub-occipital</p>	MCQ exams
	9-Obtain a knowledge of the anatomy of the posterior triangle and the anterior triangles of the neck	<p>1-Describe the boundaries, and contents of the posterior triangle of the neck</p> <p>2- Describe the anterior triangle, boundaries and contents of its sub-triangles</p>	MCQ exams
	10. Obtain a knowledge of the anatomy of anterior abdominal muscles	1. Describe the anatomy of the abdominal muscles	MCQ exams
	11. Obtain an understanding of the inguinal canal	1. Describe the anatomy of the inguinal canal	MCQ exams
	12- understand the development of limbs	1. Describe the process of the development of limbs	MCQ exams
	13-Recognize the features of the bones of the upper limbs	<p>2-Explain the principal distinguishing features of the:</p> <ol style="list-style-type: none"> 1. Scapula 2. Clavicle 3. Humerus 4. Radius 5. Ulna 6. Carpus <p>Phalanges .</p>	MCQ exams
	14-Obtain knowledge about the anatomy of Scapular muscles and Arm muscles	<p>1. 33. List the muscles that are attached to the scapula</p> <p>Describe the attachments, action, nerve and blood supply of scapular muscles</p> <p>2. Illustrate the intermuscular spaces related to the scapula and their contents</p>	MCQ exams

		<ol style="list-style-type: none"> 3. Describe the rotator cuff muscles and discuss their clinical significance 4. Describe the muscles of the arm, their actions, nerve and blood supply 5. Describe the anatomy of the shoulder girdle 	
	15-Recognize the anatomy of Axilla, Cubital Fossa and Muscles of the forearm	<ol style="list-style-type: none"> 1. Define the axilla 2. Describe the boundaries and contents of the axilla 3. Explain the importance of the axilla 	MCQ exams
	16-Recognize the anatomy of the cubital Fossa and Muscles of the forearm	<ol style="list-style-type: none"> 1 -Describe the cubital fossa and list its contents 2-Illustrate the clinical importance of the cubital fossa 3-Describe the muscles in the anterior and posterior compartments of the forearm, the elbow joint 	MCQ exams
	17. Obtain an understanding of the anatomy of the hand	<ol style="list-style-type: none"> 1. List the muscles acting on the wrist joint and the movement they perform 2. Describe the carpal tunnel, flexor and extensor retinacula, and the structures about them 3. Describe the anatomical snuffbox 4. Describe the movements of the thumb and fingers 6-List the muscles acting on the thumb and fingers 	MCQ exams
	18. Recognize the anatomy of joints of upper limbs	<ol style="list-style-type: none"> 1. Describe the anatomy of shoulder joint 2. Describe the anatomy of elbow joint 3. Describe the anatomy of wrist joint 	MCQ exams

	19-Recognize the features of the bones of the lower limb	<p>Explain the distinguishing features of the:</p> <ol style="list-style-type: none"> 1. Hip bone 2. Femur 3. Tibia 4. Fibula 5. Tarsal bones 6- Phalanges 	MCQ exams
	20- Recognize the anatomy of thigh,	<ol style="list-style-type: none"> 1. Describe the inguinal ligament and inguinal canal 2. Describe the femoral sheath and femoral triangle and their contents 3. Describe the adductor canal and adductor hiatus 4. List the muscles of the thigh 5. Describe the attachments of the thigh muscles, their actions, and their nerve and blood supply 	MCQ exams
	21-Recognize the anatomy of muscles of the gluteal region	<ol style="list-style-type: none"> 1-List the muscles in the gluteal region 2-Describe the attachments, action and nerve supply of the gluteal muscles 3-Describe the greater and lesser sciatic foramina and structures passing through them 	MCQ exams
	22. Recognize the anatomy of muscles of leg	<ol style="list-style-type: none"> 1.List the muscles of the leg 2. Describe the attachments of the leg muscles, their actions, and their nerve and blood supply 3-Describe the popliteal fossa and its contents 	MCQ exams
	23- Recognize the anatomy of the foot	<ol style="list-style-type: none"> 1. Describe the components and movements of the ankle joint 2. List the muscles acting on the ankle joint and the movements they perform 3. List the muscles acting on the toes 4. Describe the movements of toes 5. Describe the retinacula which are related to the foot and the structures in relation to the retinacula 6. List the muscles in the four layers of the sole of the foot 7-Describe the arches of foot 	MCQ exams

	24. Obtain an understanding of the anatomy of joints of lower limb	<ol style="list-style-type: none">1. Describe the components of the hip joint2. List the ligaments associated with the hip joint and their attachments3. Describe the muscles acting on the hip joint according to the type and movement they perform 4. Describe the components and movements of the ankle joint5. List the muscles acting on the ankle6- Describe the components of the knee joint7- List the ligaments associated with the knee joint and their attachment8- List the muscles acting on the knee joint according to the type and movement they perform	MCQ exams
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STUDENT LEARNING OUTCOMES MATRIX FOR THE PHYSIOLOGY

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes	Assessment Method
		1- Functions of the skin	a) Protective function: -Innate and adaptive immune response -Identify the concept of the epidermal unit, Melanin formation, functional interaction between melanocytes and keratinocytes, endocrine and paracrine factors affecting melanocyte differentiation and melanin formation. b) Regulation of water loss: Understand transepidermal water loss and the role of aquaporins c) excretory function: recall types of sweat glands, mechanism of sweat secretion	MCQ exams
			d) Neuroendocrine function: interpret Sensory function, endocrine function (touch and oxytocin, Cutaneous Hypothalamic-pituitary adrenal (HPA) Axis, vitamin D synthesis).	

	<p>2- Skin Functions (cont.)</p>	<p>a) Role in body temperature regulation: differentiate between body core and skin temperature. Understand countercurrent heat exchange, basic physics of heat loss from the skin surface, acclimatization of the sweating mechanism to heat.</p> <p>*Biological clocks and the skin :</p> <p>-outline the Effect of circadian changes on skin pH, protection, sebum production, cell proliferation, cell repair, transepidermal water loss, skin penetration, and skin blood flow.</p> <p>-Apply the concept of chronotherapy relative to skin circadian changes</p>	<p>MCQ exams</p>
	<p>3-Structure of skeletal Muscles</p>	<p>-Describe Neuromuscular Junction and Neuromuscular transmission</p> <p>-Compare End plate potential and action potential</p> <p>-Define Motor Unit and nerve-muscle interaction.</p> <p>-Understand Excitation contraction coupling</p> <p>Molecular mechanism of skeletal muscle contraction</p>	<p>MCQ exams</p>
	<p>4-Muscle relaxation, the role of ATP in muscle contraction and Relaxation.</p>	<p>Understand the Changes following skeletal muscle Contraction:</p> <p>A-Electrical change: b-excitability changes</p>	<p>MCQ exams</p>

		c-Mechanical changes: Muscle twitch, summation of contractions, staircase phenomenon (treppe), isometric versus isotonic contraction	MCQ exams
	5-Changes following skeletal muscle contraction	Mechanical changes (cont.): compare concentric and eccentric isotonic contraction. Understand the length tension relationship and load velocity relationship. D-Metabolic changes: Identify energy sources and muscle metabolism during rest, contraction and recovery (oxygen debt). -Identify the causes of Muscle fatigue -Identify Types of Muscle fibres	MCQ exams
	6-Grading of Muscle activity	-Understand the mechanisms of Grading of Muscle activity: Recruitment of motor units, Size Principle of Motor Units Recruitment. *Interpret the Mechanism of Skeletal muscle's plasticity *Define Myokines and identify examples of endocrine, paracrine and endocrine communications of skeletal muscles with other organs through myokines.	MCQ exams

STUDENT LEARNING OUTCOMES MATRIX FOR THE PHARMACOLGY

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes	Assessment Method
		1-Drugs for Dermatological Disorders	<ul style="list-style-type: none"> ● Describe pharmacologically relevant pathogenetic processes related to acne vulgaris and identify potential drug targets. ● Understand the mechanism of action of retinoids, their therapeutic indications, up-to-date guidelines of their clinical use, major adverse effects, and black box warnings. ● Identify the pharmacology of other frequently utilized medications used for acne including benzoyl peroxide, azelaic acid and salicylic acid. ● Recognize classes of topical and systemic antibiotics used for the treatment of acne and dermatological infections. ● Describe the mechanisms of action and therapeutic indications for agents used to treat ectoparasitic infections. ● Understand the mechanisms of action and adverse effects of hydroquinone and methoxsalen and their role in the management of pigmentation disorders. ● Describe the pharmacology of drugs utilized for the treatment of psoriasis including retinoids, keratinolytic agents, corticosteroids, and biological therapy in terms of mechanisms of action, therapeutic indications and major adverse effects. List the mechanisms of 	MCQ exams

			action and clinical uses of trichogenic Agents.	
		2-3: Drugs for Rheumatoid	<ul style="list-style-type: none"> Understand basic inflammatory processes associated with the development of rheumatoid 	MCQ exams
		Arthritis and Osteoarthritis	<p>arthritis and identify relevant molecular drug targets.</p> <ul style="list-style-type: none"> Describe the biosynthesis of prostaglandins, examples of their therapeutic uses and understand the cyclooxygenase pathway and the differences between cyclooxygenase 1 and cyclooxygenase 2. Recognize the mechanisms of action of the most frequently prescribed non-steroidal anti-inflammatory drugs, their clinical indications for rheumatoid arthritis, and the main adverse effects relevant to their selectivity for cyclooxygenase 1 or 2. Understand the mechanism of action of aspirin, its anti-inflammatory and non-anti-inflammatory uses, major adverse effects and role in the treatment of rheumatoid arthritis and other disease. <p>List Traditional Disease-Modifying Antirheumatic Drugs</p> <ul style="list-style-type: none"> DMARDs), understand their mechanisms of action and therapeutic indications with a focus on methotrexate. <p>List Biologic Disease-Modifying Antirheumatic Drugs B-DMARDs understand their mechanisms of action and major clinical indications.</p>	
		4- Drugs for Gout	<ul style="list-style-type: none"> Revise the pathophysiology of gout and relevant biochemistry of uric acid. Describe the clinical guidelines for the treatment of an acute gouty episode, the role 	MCQ exams

			<p>of non-steroidal anti-inflammatory drugs and the pharmacology of colchicine</p> <ul style="list-style-type: none"> • Understand the role of xanthine oxidase inhibitors and uricosuric agents in the chronic treatment of gout. 	
			<ul style="list-style-type: none"> • Identify the mechanisms of action, therapeutic uses, and adverse effects of allopurinol, febuxostat, and probenecid. • Identify drug-drug interactions associated with the use of probenecid. 	
		<p>5-6 Neuromuscular Junction Pharmacology and Skeletal Muscle Relaxants</p>	<ul style="list-style-type: none"> • Revise the anatomy and pharmacology of the neuromuscular junction including major neurotransmitter pathways and receptors. • Differentiate between agonist (depolarizing) and antagonist (non-depolarizing) neuromuscular blocking agents in terms of mechanism of action, therapeutic indications and most common adverse effects. • Recognize the role of dantrolene as an antidote for the management of malignant hyperthermia. • Understand the pharmacological component of Rapid Sequence Intubation. • Describe pharmacologically relevant pathogenetic process implicated in myasthenia gravis 	MCQ exams

			<ul style="list-style-type: none">● Describe the pharmacology of cholinesterases and differentiate between reversible and irreversible indirect-acting cholinergic agonists in terms of mechanism of action, therapeutic uses and major Adverse effects.● Describe toxicology-relevant implications of irreversible cholinesterase inhibitors (mainly organophosphates) from a clinical viewpoint. List antispasmodic and antispastic skeletal muscle relaxants and identify their mechanisms of action, therapeutic indications and adverse effects.	
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STUDENT LEARNING OUTCOMES MATRIX FOR THE MICROBIOLOGY

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes	Assessment Method
		1-Anaerobes and clostridium perfringens and Gas gangrene Trichinella Spiralis	<ul style="list-style-type: none"> ● Describe the morphological, Bacteroides and trichinella features, pathogenesis and virulent factors, laboratory diagnosis, treatment, and prevention of clostridium perfringens which is the main cause of gas gangrene. ● Describe the role of cl. Perfringens and Bacteroides in gas gangrene and the role of Trichinella in muscle infection. Explain their laboratory diagnosis, pathogenesis, and treatment. ● Describe the morphological features, pathogenesis and virulent factors, laboratory diagnosis treatment, and prevention of clostridium perfringens ● Describe the role of aerobes in the formation of deep wound infection and abscess. ● Describe the role of Trichinella in muscle infection and explain their laboratory diagnosis, pathogenesis, and treatment. ● Describe the role of bacteria in the pathogenesis of osteoarthritis, arthritis, specimen collection Identification and treatment. 	MCQ exams

		2-Bacterial infections of the skin.	<ul style="list-style-type: none"> ● Pathogenesis of skin commensals and pathogens ● Describe the antibioticsensitivity of each organism (Diphtheroids ,Staphylococci, Streptococci, Propionobacterium acnes , Mycobacteria) <p>Explain types, pathogens of would infection methods of specimen collection for proper diagnosis of types Bacteria andlaboratory diagnosis</p>	MCQ exams
		3-Viral infections of the skin.	Explain morphology and pathogenesis as well as diagnostic procedures ofviruses infecting skin.	MCQ exams
		4-Viral infections of the skin.	Describe the Herpe's andchildhood exanthen.	MCQ exams
		5-Parasitic infections of the skin.	Discuss the parasites that infest the skin (Scabes Leishmania and Onchocerca). Briefly describe the life cycle, treatment and prevention of each parasiteDescribe parasites that infest theskin, their life cycle, treatment and prevention. (Scabes, Leishmania, Oncocercafleas, loaloa, and cutaneous larvamigrans)	MCQ exams
		6-Fungal infections of the skin	<p>-Describe the fungi that infect the skin and subcutaneous tissue, their identification and treatment (Dermatophytes , Candida, and Mycetoma agents)</p> <p>-Describe the fungi that infect the skin, their clinical classification, their identification and treatment (cutaneous, subcutaneous and opportunistic)</p>	MCQ exams

STUDENT LEARNING OUTCOMES MATRIX FOR BIOCHEMISTRY

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes of biochemistry	Assessment Method
		1-Biochemistry of Muscles, Bones and connective tissue	Understand the role of alkaline phosphatase, calcium, phosphate, and vitamin D in bone formation and remodeling.	MCQ exams
		2-Metabolic disorders	Clinical biochemistry of muscle and bone.	MCQ exams
		3-Bone markers	Discuss the markers for bone formation and resorption and their clinical use in diagnosis.	MCQ exams

STUDENT LEARNING OUTCOMES MATRIX FOR THE PATHOLOGY

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes
	1-Soft tissue tumor	1-Describe the Types, & Pathological Features Of Lipoma & Liposarcoma ★ Describe Reactive Fibrous Proliferations: Nodular Fasciitis, Myositis Ossificans, Superficial & Deep Fibromatoses. 2- Describe the Pathogenesis, Types, & Pathological Features Of: (1) Fibrosarcoma (2) Benign & malignant fibrohistiocytic tumors, (3) Leiomyoma & Leiomyosarcoma (4) Synovial Sarcoma	MCQ exams
	2-Diseases of skin	1-Define the dermatologic macroscopic & microscopic Terms. 2-Describe the Etiology, Pathogenesis, Gross, Microscopic & Clinical Features of the: Acute inflammatory dermatoses: Urticaria, Acute Eczematous Dermatitis, Contact dermatitis, & Erythema Multiforme. Chronic inflammatory dermatoses: Psoriasis, Lichen Planus, & Lichen Simplex Chronicus	MCQ exams

	<p>3,4-Diseases of skin</p>	<p>1-Describe the Etiology, Pathogenesis, Gross, Microscopic & Clinical Features Of The Infectious Dermatoses: Bacterial, Fungal Infection, & viral infections [Verrucae (Warts)]</p> <p>2-Describe the Etiology, Pathogenesis, Gross, Microscopic (including the direct immunofluorescence findings) features of the Blistering (Bullous) skin disorders: Pemphigus (Vulgaris & Foliaceus), Bullous Pemphigoid, & Dermatitis Herpetiformis.</p> <p>3-Describe the Pathogenesis, Gross, & Microscopic Features Of: Seborrheic Keratosis (Basal cell papilloma) Sebaceous Adenoma Actinic Keratosis</p> <p>Squamous Cell Carcinoma Basal Cell Carcinoma Dysplastic Nevus Melanocytic nevi Melanoma.</p>	<p>MCQ exams</p>
	<p>5- Non-neoplastic bone conditions and joint diseases</p>	<p>1-Describe the Etiology, Pathogenesis, Pathologic & Clinical features, Complications, & Diagnosis of: Osteogenesis Imperfecta, Osteopetrosis, acute, Chronic, & Tuberculous osteomyelitis, and Paget Disease (Osteitis Deformans), and osteonecrosis.</p>	<p>MCQ exams</p>
	<p>6. Non-neoplastic bone conditions and joint diseases</p>	<p>1-Describe the Types, Pathogenesis, Pathologic & Clinical Features of Osteoarthritis (OA) &</p>	<p>MCQ exams</p>

		<p>2-Compare Between the Morphologic Features of OA & Rheumatoid Arthritis.</p> <p>3-Describe the Types, Pathogenesis, Pathological features & Clinical Stages of gout and pseudogout</p>	
	7- Bone tumors and tumors-like lesions	<p>1-Describe the Etiology, Pathogenesis, Gross Microscopic & Radiological Features, Diagnosis & Routes of spread of:</p> <p>(1) Osteogenic sarcoma,</p> <p>(2) Chondrosarcoma,</p> <p>(3) Ewing's sarcoma, &</p> <p>(4) Giant-Cell Tumor (GCT) of Bone (osteoclastoma).</p> <p>(1) Osteomas, Osteoid Osteomas, & Osteblastomas</p> <p>(2) Osteochondroma, single & multiple chondromas (Ollier disease & Maffucci syndrome)</p>	MCQ exams
	8. Muscle diseases	<p>1-Describe the Pathogenesis, Pathologic & Clinical Features of:</p> <p>(1) X-Linked muscular dystrophy (Duchenne & Becker Muscular Dystrophy)</p> <p>(2) Autosomal muscular dystrophies.</p> <p>(3) Myotonic dystrophy,</p> <p>(4) Myopathies, congenital & toxic</p> <p>(5) Myasthenia Gravis</p> <p>(6) Lambert-Eaton Myasthenic Syndrome</p>	MCQ exams

Students learning outcomes of the practical sections

1	Anatomy Lab 1	<p>1-Enumerate the cells that are found in the epidermis and describe their main features and functions.</p> <p>2-List the layers that form the epidermis and describe their main features and functions.</p> <p>3-Explain the significance of the jigsaw-like epidermal-dermal junction.</p> <p>4-Describe the parts of the dermis and the main differences between them.</p> <p>5-Describe the hypodermis.</p> <p>6-List the different receptors of the skin and describe their features.</p> <p>7-Understand the features of the hair and its associated structures.</p> <p>8-Describe the main features of the glands in the skin and 9-identify the differences between them.</p> <p>10- Describe the nail and its main parts and features.</p> <p>11- Identify the differences between thick and thin skin.</p>	MCQ exams
2	Anatomy Lab 2 The Bones of Head & Neck	<p>1. Name the bones of the cranium and facial skeleton</p> <p>2. Understand the external features of the skull (Norma frontalis, Norma verticalis, Norma lateralis, Norma occipitalis, Norma basalis)</p> <p>3. Study the features of the interior of the skull</p> <p>4. Study the foramen, fissures of skull & the main structures passing through</p> <p>5. Describe the features of the mandible</p> <p>6. Describe the features of cervical vertebrae</p>	MCQ exams
3	Anatomy Lab 3 The Scalp Face and the Neck	<p>1. Study the structure, layers, muscles, blood supply, nerves & lymph drainage of the scalp</p> <p>2. Study the muscles, blood vessels, motor and sensory nerve supply, & lymph drainage of the face</p> <p>3. Understand the cervical deep fascia (types & extension), and the superficial nerves & veins of the neck</p> <p>4. Describe the attachment, nerve supply, and action of sternomastoid muscle posterior triangle and its subdivisions</p> <p>2. Study the boundaries of the anterior triangle</p> <p>3. Describe the boundaries & contents of subdivisions of anterior triangle</p>	MCQ exams

		4. describe the anterior & lateral pre-vertebral muscles	
4	Anatomy Lab 4 Bones and joints of the upper	1. Identify the different parts of the bones of the upper and lower limbs. 2. Identify the components of the joints of the upper and lower limbs	MCQ exams
5	Anatomy Lab 5 Muscles of the upper limb	1. Identify the muscles of the shoulder, arm, forearm, and hand in the upper limb	MCQ exams
6	Anatomy Lab 6 Muscles of the lower limb	1. Identify the muscles of the glutea region and the anterior, medial, and posterior compartments of the thigh. 2. Identify the muscles in the anterior, lateral, and posterior compartments of the leg. 3. Identify the muscles of the foot	MCQ exams

<p><u>Pathology Lab 1 & 2</u></p> <p>After reviewing and discussing the colored photographs of the:</p> <p>(1) gross specimens and of the (2) histopathological sections are given in lectures as a power point presentations during the practical hours.</p>	<p>★ The student should be able to identify, describe, and diagnose the common and important pathological lesions of bones, joints, soft tissues, muscle, and skin disorders given in the module.</p>	MCQ exams
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Biochemistry lab 1,2	<p>Demonstrate proficiency in laboratory techniques for measuring serum levels of vitamin D and calcium, including sample preparation and use of appropriate assays.</p> <p>Analyze and interpret laboratory results, correlating vitamin D and calcium levels with musculoskeletal health and disease states.</p> <p>Discuss the implications of vitamin D and calcium deficiency on musculoskeletal disorders and overall health</p> <p>Understand how to correct abnormalities in vitamin D and calcium levels using oral and injectable formulations</p>
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ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual needs.

Special Needs Section: Student Services and Care Unit

Tel: 053903333ext. 4132 / 4583 / 5023

**Location: Deanship
of Students Affairs**

Email:

stydent@hu.edu.jo

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance.* It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected

Late or Missed Assignments

In all cases of assessment, students who fail to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.

- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Grading Policy:

Grades can be based on the following:

- First in-course exam (Theory) = 40%.
- Second in-course exam (Practical) = 20%.
-
- Final end-course exam (Theory) = 40%.
- Total Points 100

- All exams are in integrated form.

**Dates of the exams: TBD*

Grades are not negotiable and are awarded according to the following criteria*:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-	Very Good	3.50
B+		3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

Weekly Schedule

		9-9:50	10-10:50	11:30-12:20	12:30-1:20	1:30-2:20	2:30-3:20
Week 1	Group						
Sunday 6/10/2024	A	Anat Skin 1	Phys 1	Micro 1			
	B	Micro 1	Anat Skin 1	Phys 1			
	C online	Phys 1	Micro 1	Anat Skin 1			
Monday 7/10/2024	A	Anat Skin 2	Anat axial 1	Phys 2			
	B online	Anat axial 1	Phys 2	Anat Skin 2			
	C	Phys 2	Anat Skin 2	Anat axial 1			
Tuesday 8/10/2024	A Online	Phys 3	Anat axial 2	Micro 2			
	B	Micro 2	Phys 3	Anat axial 2		Anat Lab Skin B1 & B2	Anat Lab Skin B3 & B4
	C	Anat axial 2	Micro 2	Phys 3	Anat Lab Skin C1 & C2		
Wednesday 9/10/2024	A	Phys 4	Pharma1	Anat axial 3			
	B	Anat axial 3	Phys 4	Pharma 1			
	Online C	Pharma1	Anat axial 3	Phys 4			
Thursday 10/10/2024	A	Bio 1	Phys 5	Anat axial 4	Anat Lab Skin A1 & A2	Anat Lab Skin A3 & A4	
	B online	Phys 5	Anat axial 4	Bio 1			
	C	Anat axial 4	Bio 1	Phys 5	Bio lab 1		

Week 2		9-9:50	10-10:50	11:30-12:20	12:30-1:20	1:30-2:20	2:30-3:20
Sunday 13/10/2024	A online	Micro 3	Anat axial 5	Pharma 2		Path1	
	B	Pharma 2	Micro 3	Anat axial 5	Path1	Anat Lab 1 B3 & B4	Anat Lab 1 B1 & B2
	C	Anat axial 5	Pharma 2	Path1	Micro 3		
Monday 14/10/2024	A	Micro 4	Anat axial 6	Anat Lab 1 A3 & A4	BIO LAB 1	Anat Lab 1 A1 & A2	
	B	Anat axial 6	Micro 4	BIO LAB 1			
	C online			Anat axial 6	Micro4		
Tuesday 15/10/2024	A	Path 2	Anat axial 7	Micro 5			
	B online	Micro 5	Path 2	Anat axial 7			
	C	Anat axial 7	Micro 5	Path2	Clinical Skills 1	Clinical Skills 1	
Wednesday 16/10/2024	A online	Anat axial 8	Pharma 3				
	B	Pharma 3	Anat axial 8				
	C	axial 8	Pharma 3	Anat Lab 1 C3 & C4	Anat Lab 1 C1 & C2		
Thursday 17/10/2024	A	Path 3	Anat axial 9	Bio 2	Anat Lab 2 A1 & A2	Anat Lab 2 A3 & A4	
	B	Anat axial 9	Bio 2	Path 3	Clinical Skills 1	Clinical Skills 1	Path lab 1
	C online	Bio 2	Path 3	Anat axial 9			

Week 3		9-9:50	10-10:50	11:30-12:20	12:30-1:20	1:30-2:20	2:30-3:20
	Group						
Sunday 20/10/2024	A	Path 4		Anat app 1	Path lab 1	Bio lab 2	
	B online		Anat app 1	Path 4			
	C	Anat app 1	Path 4	Anat Lab 2 C3 & C4	Anat Lab 2 C1 & C2	Path lab 1	
Monday 21/10/2024	A online		Anat App 2	Pharma 4			
	B	Pharma 4	Anat Lab 2 B1& B2	Anat App 2	Anat Lab 2 B3& B4	Bio lab 2	
	C	Anat App 2	Pharma 4	Bio lab 2		Anat Lab 3 C1& C2	Anat Lab 3 C3& C4
Tuesday 22/10/2024	A	CM 1	Anat App 3	Path 5		Anat Lab 3 A1& A2	Anat Lab 3 A3& A4
	B	Path 5	CM1	Anat App 3	Clinical Dermatology	Clinical Skills 1	Clinical Skills 1
	C online	Anat App 3	Path 5	CM1	Clinical Dermatology		
Wednesday 23/10/2024	A	Anat App 4			Pharma5		
	B online		Pharma5	App 4 Anat			
	C	Pharma5	Anat App 4	Anat Lab 4 C1 & C2	Anat Lab4 C3 & C4	Path lab 2	
Thursday 24/10/2024	A online			Path 6	Anat App 5		
	B	Anat App 5	Path 6	Anat Lab3 B3& B4	Anat Lab3 B1& B2		
	C	Path 6	App 5 Anat		Clinical Skills 2	Clinical Skills 2	

Week 4		9-9:50	10-10:50	11:30-12:20	12:30-1:20	1:30-2:20	2:30-3:20
Sunday 27/10/2024	A	Micro 6	Path 7	Anat App 6			
	B	Anat App 6	Micro 6	Path 7	Anat Lab 4 B3& B4	Anat Lab 4 B1& B2	
	C online	Path 7	Anat App 6	Micro 6			
Monday 28/10/2024	A	Anat App 7	Micro 7	Anat App 8	Anat Lab 4 A3& A4	Anat Lab 4 A1& A2	
	B Online	Anat App 8		Anat App 7	Micro 7		
	C	Anat app 7	Anat app 8	Micro 7			
Tuesday 29/10/2024	A online	Anat app 9	Clinical Orthopedic	Pharma6	Clinical Skills 2	Clinical Skills 2	
	B	Pharma6	Clinical Orthopedic	Anat app 9	Anat Lab 5 B1 & B2	Anat Lab 5 B3 & B4	
	C	Anat Lab 5 C1 & C2	Clinical Orthopedic	Anat Lab 5 C3& C4	Pharma6	Anat app 9	
Wednesday 30/10/2024	A	Anat App 10	Path 8	BIO 3			
	B	Path 8	BIO3	Anat App 10	Lab path 2		
	C Online	BIO 3	Anat App 10	Path 8			
Thursday 31/10/2024	A	Clinical Skills 2	Clinical Skills 2	Clinical Radiology	Anat App 11	Lab path 2	CM2
	B online	CM2	Anat App 11	Clinical Radiology			
	C	Anat App 11	CM2		Clinical Skills 2	Clinical Skills 2	

Week 5		9-9:50	10-10:50	11:30-12:20	12:30-1:20	1:30-2:20	2:30-3:20
Sunday 3/11/2021	A	Anat 12 app	Anat 13 app	Anat Lab 5 A1& A2	Anat Lab 4 A3& A4		
	B			Anat 12 app on line	Anat 13 app Online		
	C					Anat 12 app	Anat 13 app

The mid, practical, and final exam dates: TBD

Summary of The module lectures and practical sessions:

(6 Credit Hours 58 Lectures+10 labs)

A-Topics & Lectures:

Topic	Number of Lectures	Anatomy	Physiology	Pharmacology	Biochemistry	Pathology	CM	Microbiology	Clinical Sessions
the skin	1 4	2	2	1	-	3	-	5	1
Bone and muscles	4 4	22	3	5	3	5	2	2	2
Total: 58 Lectures		24	5	6	3	8	2	7	3

B-Practical:

10 Labs: 6 Anatomy + 2 Biochemistry + 2 Pathology

Code of Practice on Assessment for Musculo-skeletal & Skin

Module (11501303) 2024 -2025

I-Formative Assessment

II-Summative Assessment

III-Students' feedback

I-Formative Assessment:

Online Quizzes on Microsoft Teams on topics included in the modules.

II- Summative Assessment:

a-Regular exams:

It follows the regulations approved by the faculty of medicine, the Hashemite University. The students will be assessed at the end of the module by three exams: Midterm (first exam), Practical (second exam), and Final exam. The question will assess different cognitive domains (Knowledge, comprehension, application). The questions will be in the form of MCQs and will be distributed on different subjects as described in the following table:

Subject	Total Number of Lectures	Number of Lectures included in the midterm exam= 35 Lectures	Number of Questions / Midterm Exam	Number of Questions /Final Exam			Number of Labs	Number of Questions /Practical Exam
				80% of the questions on the topics not included in the midterm= 48 Questions	20% on midterm content= <u>12 Questions</u>	Total questions for the final=50 Questions		
Anatomy	24	16	27	17	4	21	6	12
Physiology	5	3	5	4	1	5	0	0
Pharmacology	6	4	7	4	2	6	0	0
Pathology	8	5	9	6	2	8	2	4
Biochemistry	3	2	3	2	1	3	1	4
Community	2	0	0	4	0	4		
Microbiology	7	5	9	5	2	7	-	
Clinical sessions	3	0	0	6	0	6		
Total	58	35	60	60			4	20

b-Makeup exams:

Absent students with accepted excuses will have make-up exams in the form of essay questions with the same grade distribution/subject as described above for the regular exams.

c-Summer exams:

Students may have a resit exam if they don't pass the regular exams at the end of the module or an exam to raise their GPA. The exams will be in the form of MCQs and will be distributed on different subjects as described in the following table **for each exam:**

Subject	Number Of Lectures	Number of Questions Of Theoretical Subjects	Number of Questions In Practical Exam
Anatomy	24	25	10
Physiology	5	6	-
Pharmacology	6	7	-
Pathology	8	9	4
Biochemistry	3	4	2
Community	2	2	-
Clinical sessions	3	3	-
Microbiology	7	8	-
Total	58	64	16

III- Students' feedback:

Two surveys will be shared with the students: one on teaching process satisfaction and the second on exam question evaluations.