



Scientific Contents of Diploma of Science in Sports Medicine Bylaws 2018

Program structure and contents

a) **Program duration: 4 semesters (2 years)**

✚ **1st part:** - One Semester (6 months).

✚ **2nd part:** - 3 Semester (1.5 year).

b) **Program structure:**

• **Total hours of program:** 40 credit hours

• **1st part:** 10 credit hours

• **2nd part :** 30 credit hour

The First Part

Compulsory Courses

Applied Anatomy

Applied Physiology

Pharmacology

Performance Enhancing Drugs

Biochemistry in Relation to Sports Medicine

Methods of research and statistics

Nutrition in Relation to Sports Medicine

Elective Courses (Choose one Course)

Behavioral sciences and their relationship to sports medicine

United Olympic Athlete

International Laws Regulating Sports

Introduction to motion mechanics

The Second Part

Sports injuries

Internal Medicine in Relation to Sports Medicine

Emergency Medicine

Dermatology in relation to sports medicine

Psychiatry in relation to sports medicine



c- Teaching plan

First part (one semester)

a- Compulsory courses:

Course Title	Course Code	Credit hours	No. of teaching hours/week	Total teaching hours (one semester)
			Lectures	
Applied Anatomy	SM 501	2	2	30
Applied Physiology	SM 502	2	2	30
Pharmacology	SM 503	1	1	15
Performance Enhancing Drugs	SM 504	1	1	15
Biochemistry in Relation to Sports Medicine	SM 505	1	1	15
Methods of research and statistics	SM 506	1	1	15
Nutrition in Relation to Sports Medicine	SM 507	1	1	15
Total		9	9	210



Elective Courses (Choose one Course):

Course Title	Course Code	Credit hours	No. of teaching hours/week	Total teaching hours (one semester)
			Lectures	
Behavioral sciences and their relationship to sports medicine	SM 508	1	1	15
United Olympic Athlete	SM 509	1	1	15
International Laws Regulating Sports	SM 510	1	1	15
Introduction to motion mechanics	SM 511	1	1	15



The Second part (three semesters)

Course Title	Course Code	No. of teaching hours/week			Total teaching hours (3 semesters)
		Theoretical	Clinical/Practical	Total	
Sports injuries	SM 512	8.5	3	11.5	517.5
Internal Medicine in Relation to Sports Medicine	SM 513	8.5	3	11.5	517.5
Emergency Medicine	SM 514	5	2	7	315
Dermatology in relation to sports medicine	SM 515	1.5	1	2.5	112.5
Psychiatry in relation to sports medicine	SM 516	1.5	1	2.5	112.5
Total	-	25	10	35	1575



Final exam:

The First Part

	Written	Oral	Practical	Clinical	Total Marks
Applied Anatomy	60	15	25		100
Applied Physiology	60	15	25		100
Pharmacology	30	20			50
Performance Enhancing Drugs	30	20			50
Biochemistry in Relation to Sports Medicine	30	20			50
Methods of research and statistics	30	20			50
Nutrition in Relation to Sports Medicine	30	20			50



Elective Courses (Choose one)

Course Title	Written	Oral	Practical	Clinical	Total Marks
Behavioral sciences and their relationship to sports medicine	30	20			50
United Olympic Athlete	30	20			50
International Laws Regulating Sports	30	20			50
Introduction to motion mechanics	30	20			50

The Second Part

Course Title	Written	Oral	Practical	Clinical	Total Marks
Sports injuries	350	75		75	500
Internal Medicine in Relation to Sports Medicine	350	75		75	500
Emergency Medicine	200	50		50	300
Dermatology in relation to sports medicine	50	25		25	100
Psychiatry in relation to sports medicine	50	25		25	100



Applied Anatomy

1) GENERAL ANATOMY

Bones :- Functions , classifications , structure of living bone , general features , growth and blood supply

-Cartilages : general features , types

-Joints :classifications (fibrous , cartilaginous , synovial) , types of synovial joints , structure of synovial joints , movements

-Skeletal muscles : characters , functions

-Fascia : types , characters , derivatives

-Spinal nerves : classification , origin ,course and structure

2) NECK AND TRUNK

-Muscles of facial expression , muscles of mastication and tempromandibular joint (T.M.J.)

-Muscles of neck :suprahyoid& Infrahyoid muscles , scalene muscles, prevertebral muscles , muscles of back of neck

-Joints , ligaments and movements of vertebral column

-Nerves of head and neck :-Cranial nerves ,cervical plexus

3) UPPER, LOWER LIMBS AND THORAX

Upper limb :--Muscles of: pectoral region , shoulder ,back of trunk ,arm ,forearm and hand

-Joints ,ligaments and movements of upper limb

-Nerves : brachial plexus ,nerves of upper limb

*Lower limb :-Muscles of : front ,medial and back of the thigh ,gluteal region , popliteal fossa , front and back of leg ,dorsum and sole of foot

-Joints and ligaments ,movements of lower limb

-Nerves :Sacral plexus , sciatic ,tibial ,common peroneal , femoral obturator , deep peroneal , superficial peroneal nerves

*Segmental innervations (dermatomes)of the head ,neck ,trunk and limbs

*Mechanism of walking ,transmission of body weight ,hand grip

Thorax :--Thoracic wall : intercostal muscles and intercostal nerves -Diaphragm, mechanism of respiration

-Heart ,Pericardium

-Mediastinum : divisions and contents



-Nerves :phrenic nerves , vagi ,recurrent laryngeal nerves
,thoracic part of sympathetic chain

4) NEUROANATOMY

Cerebral hemisphere :Cerebral cortex , basal ganglia ,
diencephalon , internal capsule

-Brain stem : midbrain , pons , medulla oblongata

-Cerebellum , Spinal cord

-Blood supply : cerebral arteries ,vertebral artery and basilar
artery , internal cerebral veins ,basal vein & great cerebral vein

-Meninges , C.S.F. (sources and circulation)

-Vertebral canal , intervertebral foramina , Sacral canal & cauda
equina





Applied Physiology

Contents

Practical

- 1-Muscle functioning testing (including isometric , isokinetic and isotonic muscle function tests)
- 2- Electromyographic (EMG) analysis of muscle function
- 3- Muscle biopsy techniques and interpretation of results
- 4- Lung function testing at rest and during exercise
- 5- Exercise testing to assess the cardiovascular response to exercise and analysis of oxygen consumption

Lectures

Structural properties of the muscle
Physiology of muscle contraction
muscle metabolism
skeletal muscle blood flow and muscle fatigue
metabolic adaptation to training
EMG activity and muscle function
Neurophysiology of movement
Gas exchange
Oxygen transport by blood
Carbon dioxide transport in the blood
Pulmonary function testing
Ventilatory response during exercise
Control of breathing
Cardiac output
Arterial blood pressure
cardiovascular response to exercise
Cardiac reserve and cardiac work
Control of heart function at rest and during exercise
Myocardial adaptation to exercise training



Pharmacology

Course contents

<p>1) General Pharmacology</p>	<ul style="list-style-type: none">• Drug forms & route of drug administration• Basic principles of pharmacokinetics• Basic principles of pharmacodynamics• Adverse effects of drugs• Drug interactions
<p>2) Pharmacotherapy pain & analgesic</p>	<ul style="list-style-type: none">• Antipyretic & anti-inflammatory drugs• Central analgesics – opioids
<p>3) Pharmacotherapy gout</p>	<ul style="list-style-type: none">• Hypouricemic & anti-gout drugs
<p>4) Pharmacology of autonomic nervous system</p>	<ul style="list-style-type: none">• Cholinergic & adrenergic transmission



5) Pharmacology of skeletal muscle	<ul style="list-style-type: none"> • Muscle relaxants
6) Local & general	

anesthetic drugs	
7) Pharmacotherapy of epilepsy	Anti epileptic & anti convulsed drugs
8) Cardiac pharmacology	Positive inotropic drugs ,
9) Pharmacotherapy of hypertension	Anti hypertensive drugs
10) Pharmacotherapy of dyslipidemias	Lipid lowering drugs (hyperlipidemic)
11) Pharmacology of hemostasis & coagulation	
12) Pharmacotherapy of anaemia	

<p>13) Pharmacotherapy of diabetes</p>	<ul style="list-style-type: none"> • Insulin & non insulin anti diabetics
<p>14) Doping control banned substances</p>	<ul style="list-style-type: none"> • Anabolic androgenic steroids , peptide hormones , growth factors & mimetics , beta-2 agonists .
<p>15) Sport supplementation</p>	
<p>16) Chemotherapeut ic</p>	<ul style="list-style-type: none"> • Antibiotics

drugs	
17) Antifungal agents	
18) Antiviral agents	
19) Pharmacotherapy of gastrointestinal diseases	<ul style="list-style-type: none">• Peptic ulcer, spasmolytic, antidiarrheal drugs & antiemetic drugs.

Performance-Enhancing Drugs

Course contents :

1- Introduction, history & categories of drug Doping(pharmacology of Performance-Enhancing Drugs)
2- Anabolic androgenic steroids
3- Hormones and related substances
4- B2-Agonists & Agents with anti-estrogenic activity
5-Diuretics and other masking agents
6- Prohibited methods
7- Stimulants
8-Prohibited substances in particular sports
9- Dietary supplements
10- Doping control procedures
11- Exercise Addiction: The Dark Side of Sports andExercise
12- Addiction in Retired Athletes
13- Sudden death in athletes
14-Concussion in Sports & Posttraumatic Stress inAthletes
15- Ethical issues and doping control



Biochemistry in Relation to Sports Medicine

<u>Course contents:</u>
Subject
Blood pH regulation, acidosis and alkalosis
Glucoseaminoglycans (GAGs), collagen , clinical correlation
Blood glucose regulation, Glucose tolerance test, hyper- and hypoglycemia
Diabetes Mellitus. Plasma lipoproteins, hyperlipidemia
Cholesterol metabolism, hypercholesterolemia and Atherosclerosis
Lipotropic factors, fatty liver
FA oxidation, ketosis
Urea cycle, NPN compounds
Heme metabolism and hemoglobinopathies
Porphyria and Jaundice
Insulin, steroid, thyroid and parathyroid hormones
Plasma enzymes & their diagnostic values
Vitamins & their deficiency manifestation
Calcium & phosphate homeostasis, sodium, potassium, iron, zink and their deficiency manifestation.
Hyperuricemia & gout
DNA structure, replication, transcription & Regulation of gene expression
RNA structure, transcription and posttranscriptional modification
Cell cycle & apoptosis, DNA damage, mutation and repair
Protein synthesis: translation and posttranslational modifications
Recombinant DNA technology, blotting techniques and gene therapy.
Liver & kidney function tests, Urine, blood, and sweat: normal and abnormal constituents& their clinical relevance.
Total



Methods of research and statistics

Course Contents

Topics
Types of data
Distribution of data
Sources of data
Collection of data: <ul style="list-style-type: none">• Sampling• Screening• Survey• Epidemiological studies
Summarization of data: <ul style="list-style-type: none">• Measures of central tendency• Measures of scatter
Presentation of data: <ul style="list-style-type: none">• Tabular presentation• Graphic presentation• Mathematical presentation
Hypothesis testing steps
Tests of significance: <ul style="list-style-type: none">• Parametric tests• Non parametric tests
Total



Nutrition in Relation to Sports Medicine

Course Contents

Topics
Basic nutrients: Carbohydrates, Fats, Proteins, Vitamins & minerals
Dietary fibers
Trace elements
Feeding of vulnerable group Females in childbearing period School children Youth Athletes Geriatric
Antioxidants
Food additives
Nutritional assessment Food balance sheet
Therapeutic nutrition Diabetic patient Hypertensive patient Renal patient Hepatic patient
Nutritional health problems:- Protein energy malnutrition: Marasmus Kwashiorkor
Vitamin deficiency:
Anaemias: Iron deficiency anaemia Megaloblastic anaemia
Dental caries Osteoporosis & osteomalachia
Obesity



Behavioral sciences and their relationship to sports medicine

- 1- Introduction & historical background
- 2- Psychology in relation to sports
- 3- Self-esteem and confidence
- 4- Basic brain structures and behavior. Developmental psychology
- 5- Personality
- 6- Stress
- 7- Emotions
- 8 – Motivation
- 9- Perception, Attention, Sensory deprivation
- 10- Social psychology
- 11- Psychology of aggression
- 12- Intelligence, Imagination and learning
- 13- Memory and thinking
- 14- Frustration and defensive mechanisms, sleep



United Olympic Athlete

Course content:

- International Governance of Individual Sports
 1. Olympic Games
 2. Olympic Charter
 3. International Olympic Committee (IOC)
 4. International Sports Federations (IFs)
 5. National Olympic Committees (NOCs)
 6. Organising Committees of the Olympic Games (OCOGs)

International laws regulating sports

1- Course content:	<ul style="list-style-type: none">• 1. Introduction<ol style="list-style-type: none">1.1. Scope of Guide1.2. List of Key Abbreviations2. Court of Arbitration for Sport<ol style="list-style-type: none">2.1. Overview2.2. Arbitral Awards• 3. Anti-Doping<ol style="list-style-type: none">3.1. World Anti-Doping Agency (WADA)3.2. National Anti-Doping Agencies3.3. Anti-Doping Treaties and Declarations
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Introduction to motion mechanics

Course content:	<ol style="list-style-type: none">1- Biomechanics in the sports field.2- Terminology used in the study of movement.3- Basic concepts and principles in mechanics4- Strength: to maintain equilibrium or to change motion.5- Kinematics of movement in a straight line.
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Sports injuries

<p>Introduction:</p> <ol style="list-style-type: none">1. Epidemiology2. General clinical approach3. general principles of prevention of sports injuries4. Muscle and soft tissue injuries:5. Acute soft tissue injuries6. Prevention of acute muscle injuries in sport <p>Knee injuries:</p> <ol style="list-style-type: none">.1 Clinical assessment of the acutely injured knee in the athlete.2 Acute injuries of the knee.3 Functional anatomy of the knee joint.4 Acute injuries to the anterior cruciate ligament.5 Acute injuries to the posterior cruciate ligament.6 Acute injuries of the collateral ligaments of the knee.7 Acute meniscal injuries of the knee.8 Acute fractures of the knee.9 Clinical assessment of the athlete with chronic knee pain.10 Clinical biomechanics of overuse injuries of the athlete.11 surgical management of Chronic anterior knee pain in the athlete.12 surgical management of Chronic medial knee pain in the athlete13. Surgical treatment of chronic knee pain in the athlete	1 محتوى المقرر:
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**Leg injuries:**

1. Clinical assessment of the acutely injured leg in the athlete
2. Acute injuries of the leg in athletes
3. Functional anatomy of the leg
4. Clinical assessment of the athlete with chronic pain in leg
5. Clinical biomechanics of overuse injuries of the leg in the athlete
6. Overuse injuries of the leg
7. Surgical treatments of chronic leg pain in athletes

Ankle and foot injuries:

1. Functional anatomy of the ankle joint
2. Clinical assessment of the acutely injured ankle and foot
3. Acute fractures to the ankle and foot in athletes
4. acute ligamentous injuries of the ankle and foot of athlete
5. Prevention of acute ligamentous injuries of the ankle
6. Clinical assessment of the athlete with chronic pain in the ankle and foot
7. Sports injury
8. Clinical biomechanics of overuse injuries of the ankle and foot
9. Surgical management of Chronic heel pain in the athlete
10. Surgical management of Chronic midfoot pain in the athlete
11. surgical management of Chronic forefoot pain in the athlete
12. Surgical treatment of chronic ankle and foot pain in athlete

Wrist and Hand injuries in the athlete:

1. Functional anatomy of the hand and wrist
2. Clinical biomechanics
3. Clinical assessment of acute hand and wrist injuries
4. Acute fractures of the hand and wrist
5. Acute soft tissue injuries
6. Clinical assessment of the athlete with chronic hand and wrist pain
7. Surgical treatment of chronic wrist and hand pain
8. Splinting the hand and wrist in athletes

2



<p>Injuries to lumbar spine in athletes:</p> <ol style="list-style-type: none">1. Functional anatomy of the lumbar spine2. Clinical biomechanics3. Clinical assessment of acute lower back injury4. Acute fractures of the lumbar spine5. Acute soft tissue injuries6. Clinical assessment of chronic lower back pain7. Overuse injuries of the lower back8. Surgical treatment of chronic lower back pain <p>Shoulder injuries:</p> <ol style="list-style-type: none">1. Shoulder dislocation2. Shoulder Instability3. Shoulder impingement4. Rotator cuff tear <p>Elbow injuries:</p> <ol style="list-style-type: none">1. Ligament injuries of the elbow2. Tennis elbow3. Golf elbow <p>Hip injuries:</p> <ol style="list-style-type: none">1. Labral injury of the hip2. Pincer hip (femero acetabular impingement(3
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Internal Medicine in Relation to Sports Medicine

Topic
<u>1) NEUROLOGY</u> - Hemiplegia, - Paraplegia, - Peripheral neuropathy, - Myopathy, - Cranial nerves, Parkinsonism.
<u>2) CARDIOLOGY</u> - Hypertension, - Heart failure, - Pericardial effusion, - Ischemic heart disease.
<u>3) NEPHROLOGY.</u> - Glomerulonephritis, - Nephrotic syndrome, - Renal failure, - Heamaturia.
<u>4) CHEST DISEASES</u> - Tuberculosis, - Pleural diseases, - Bronchial asthma, - Chronic obstructive pulmonary disease (COPD), - Interstitial pulmonary disease,
<u>5) BLOOD DISEASES</u> - Anemia, - Hemorrhagic blood diseases, - Iron overload.
<u>6) ENDOCRINE DISEASES</u> - Diabetes, - Thyroid diseases, - Suprarenal gland diseases.
<u>7) RHEUMATOLOGY</u> - Gout
<u>8) ACID-BASE BALANCE</u>
<u>9) Na⁺ & K⁺ ABNORMALITIES</u>



Emergency Medicine

Topic
General surgical emergencies
Anaesthesia & ICU
Trauma ATLS
ORTHOPEDIC EMERGENCIES
ENT emergencies
Neurosurgical emergencies
Cardiothoracic surgical emergencies
Ophthalmological emergencies
Obstetric & gynecological emergencies
Urological emergencies
Internal medicine emergencies
Cardiac emergencies
Chest emergencies
Neuropsychiatry emergencies
Pediatric emergencies
Diagnostic radiological emergencies
X Infection control
Medical ethics
TRANSPLANTATION

Dermatology in Relation to Sports Medicine

Topic



<ul style="list-style-type: none"> • Diagnosis of skin diseases
<ul style="list-style-type: none"> • Allergic skin disorders
Urticarias
Disorders of blood vessels a- Rosacea Flushing
1- Disorders of sweat glands a- Hyperhidrosis <ul style="list-style-type: none"> • Miliaria
Disorders due to physical agents a- Dermatoses due to heat and cold Dermatoses due to UV radiation
Infections and infestations <ul style="list-style-type: none"> • Cutaneous pyogenic infections • Cutaneous viral infections • Mycology • Parasitic skin diseases
Regional dermatology
Sexual maturation (puberty)
Puberty disorders
Testicular torsion
Varicocele
Total



Psychiatry in relation to sports medicine

1- Psychiatry history and mental status
2-Classification in psychiatry
3- Mood Disorders
3- Anxiety Disorders
4- Schizophrenia and other psychotic Disorders
5-Dissociative Disorders
6- Alcohol, opioids and other substance related disorders
7-Somatoform Disorders, Factitious disorders and Malingering
8- Child and adolescent Psychiatry
9- Delirium ,Dementia and Amnestic disorders
Organic mental disorders
11-personality disorders
12-Sleep disorders
13-Sexual dysfunction
14-Eating and impulse control disorders
15-Liaison psychiatry(and covid 19)
16-Psychotherapy



Service planning and administration
Psychiatric disorders in women
Guidelines of management of psychiatric
<input type="checkbox"/> Fever in psychiatry
Total