



KHYBER MEDICAL UNIVERSITY

DOCTOR OF PHYSICAL THERAPY CURRICULUM

YEAR ONE STUDY GUIDE

(SEMESTER 2)

16 Weeks Activity Planner

2021-22

**CENTRAL CURRICULUM & ASSESSMENT COMMITTEE FOR
NURSING, REHABILITATION SCIENCES & ALLIED HEALTH SCIENCES**



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Introduction

KMU VISION

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

KMU MISSION

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

CENTRAL CURRICULUM COMMITTEE

Opened new door, for the beginning of new era under the supervision of Prof Dr. Zia ul Haq, VC Khyber Medical University and Dr. Brekhna Jamil Director IH-PE&R the Central Curriculum & Assessment Committee has been formulated. This is first step taken to change the dynamics of Allied Health Sciences and Nursing Education in Pakistan. Committee by using a craft man approach has developed study guide which will provide pathways for other to follow and KMU will preserve the leadership in providing quality education across Pakistan and will be a reference point of quality in future. Committee has developed curricula to promote inter-professional learning, enhancing and improving the quality of life for people by discovering, teaching and applying knowledge related to Nursing, rehabilitation Sciences & Allied Health sciences.

High-quality education is relevant to patient needs and the changing patterns of skills that are demanded by modern health care and aligning assessment and providing quality training to students will definitely will be the outcome. Which will strengthen and enhance quality of Health System across Pakistan.

The Central Curriculum & Assessment Committee is as follows:

Dr. Brekhna Jamil	Chairperson	Director Institute of Health Professions Education & Research, KMU
Prof. Dr. Zia Ul Islam	Member	Professor ENT
Dr. Syed Hafeez Ahmad	Member	Addl. Controller of Examination Khyber Medical University
Dr. Danish Ali Khan	Member	Director/ Principal Northwest Institute of Health Sciences
Sardar Ali	Member	Assistant Professor Institute of Nursing Khyber Medical University
Muhammad Asif Zeb	Member	Lecturer Institute of ParaMedical Sciences Khyber Medical University
Nazish A Qadir	Member	Lecturer Institute of Physical Medicine & Rehabilitation Khyber Medical University
Syed Amin Ullah	Secretary	Assistant Director Academics Khyber Medical University



INTRODUCTION

Physical therapy is an essential segment of modern health care system. It is a “science of healing and art of caring”. It pertains to the evaluation, assessment and treatment of musculoskeletal, Neurological, Cardio-Vascular and Respiratory systems’ functional disorders including symptoms of pain, edema, physiological, structural and psychosomatic ailments. It also deals with methods of treatment based on movement, manual therapy, physical agents, and therapeutics modalities to relieve the pain and other complications.

Hence, Physical therapy covers basic parameters of healing sciences i.e. preventive, promotive, diagnostic, rehabilitative, and curative.

OBJECTIVES

By the end of this program, students should be able to:

1. **Demonstrate in-depth knowledge of the basic and clinical sciences relevant to physical therapy, both in their fundamental context and in their application to the discipline of physical therapy.**
2. **Understand, correlate and apply theoretical foundations of knowledge to the practice of physical therapy; evaluate and clarify new or evolving theory relevant to physical therapy.**
3. **Demonstrate the behaviors of the scholarly clinician by developing and utilizing the process of critical thinking and inquiry, particularly focused on the improvement of the practice of physical therapy and the delivery of health care.**
4. **Engage in reflective practice through sound clinical decision making, critical self-assessment and commitment to lifelong learning.**
5. **Demonstrate mastery of entry level professional clinical skills. Provision of these services is based on the best available evidence and includes physical therapy examination, evaluation, diagnosis, prognosis, intervention, prevention activities, wellness initiatives and appropriate health care utilization.**
6. **Prepared to influence the development of human health care regulations and policies that are consistent with the needs of the patient and of the society.**
7. **Demonstrate leadership, management, and communication skills to effectively participate in physical therapy practice and the health care team.**
8. **Incorporate and demonstrate positive attitudes and behaviors to all persons.**
9. **Demonstrate the professional and social skills to adapt to changing health care environments to effectively provide physical therapy care.**

SECOND SEMESTER SUBJECTS

S.No	Subjects	Duration
1	RSC-611 ANATOMY -II 4(3-1)	16 weeks
2	RSC-612 PHYSIOLOGY-II 3(2-1)	16 weeks
3	RSC-613 KINESIOLOGY & BIOMECHANICS-II 3(2-1)	16 weeks
4	RSC-614 ENGLISH-II 3(3-0)	16 weeks
5	RSC-615 ISLAMIC STUDIES/ ETHICS 2(2-0)	16 weeks
6	RSC-666 MEDICAL PHYSICS 3(2-1)	16 weeks



2nd Semester

RSC-611 ANATOMY -II 4(3-1)

Course Description

The focus of this course is an in-depth study and analysis of the regional and systemic organization of the body. Emphasis is placed upon structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, musculoskeletal and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prosected materials and radiographs are utilized to identify anatomical landmarks and configurations of the lower limb and abdomen pelvis

Cognitive Domain

By the end of this subject, students should be able to:

1. **Explain the basic knowledge of human anatomy.**
2. **Explain the nerve supply of lower limb & gluteal region.**
3. **Describe the lumbosacral plexus.**
4. **Discuss the distribution of all arteries, veins & lymphatic drainage of lower limb.**
5. **Understand the locations, functions and appearances of the abdomen and perineum.**
6. **Identify the basic structure of cells, tissues and organs and describe their contribution to normal function.**
7. **Understand why histology is essential for accurate diagnosis and monitoring of disease progression.**

Skills Domain

By the end of this subject, students should be able to:

1. **Examine the different parts of compound microscope and perform basic**

staining techniques.

2. **Demonstrate the surface anatomy of lower limb.**
3. **Demonstrate the surface markings of lower limb.**
4. **Describe the major areas of abdomen on an appropriate diagram or model.**
5. **Demonstrate the anatomy, including relations, of abdomen & viscera using medical images (X-ray etc).**

Affective Domain

By the end of this subject, students should be able to:

1. **Demonstrate punctuality.**
2. **Follow the specified norms of the IL, SGD teaching & learning.**
3. **Demonstrate the humbleness and use the socially acceptable language during academic and social interactions with human models, colleagues and teachers.**
4. **Make ethically competent decisions when confronted with an ethical, social or moral problem related to professional or personal life.**

TOS -RSC-611 ANATOMY -II 4(3-1)

S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items
				C	P	A				
TOPIC: MUSCLES OF ANTERIOR ABDOMINAL WALL										
1	Week-1	Explanation anterior wall	Explain superficial and deep fascia	C2			Interactive Lecture/SGD	3	MCQ's	5
2		Muscles	Describe the origin, insertion, nerve supply and actions of anterolateral abdominal wall muscles	C2						
3		Blood supply	Discuss blood supply and nerve supply of anterior abdominal wall	C2						
4		Lymphatic	Discuss lymphatic drainage of anterior abdominal wall	C2						
5		Landmarks	Identify surface landmarks of anterior abdominal wall on chart/ model Independently		P4		Demo	2	OSPE	5
6			Demonstrate respect towards teachers and fellows while Identify surface landmarks of anterior abdominal wall on chart/ model			A	Role Play			
TOPIC: RECTUS SHEATH/ INGUINAL CANAL										
7	Week-2	Rectus sheath	Describe the formation of rectus sheath	C2			Interactive Lecture/SGD	3	MCQ's	5
8		Contents	Describe the content of rectus sheath	C2						
9		Boundaries	Describe the boundaries of inguinal canal	C2						
10		Contents	Enlist the contents of inguinal canal in male and female	C1						
11		Differentiation	Differentiate between direct and indirect inguinal hernia	C4						
12		Surface marking	Identify landmarks of rectus sheath and inguinal canal on chart/ model Independently		P4		Demo	2	OSPE	5
13	Demonstrate respect towards teachers and fellows while Identify landmarks of rectus sheath and inguinal canal on chart/ model				A	Role Play				
TOPIC: POSTERIOR ABDOMINAL WALL										
14	Week-3	Structures	Enumerate the structure of posterior abdominal wall	C2			Interactive Lecture/SGD	3	MCQ's	5
15		Explanation	Explain the structures of lumber vertebrae	C2						
16		Surface marking	Label the origin and insertion of muscles on lumber vertebrae Independently		P4		Demo	2	OSPE	5
17			Identify the bony landmarks of lumber vertebrae Independently		P4					
18			Adopt how to care and handle joints Models			A	Role Play			

S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items				
				C	P	A								
TOPIC: PERITONEUM/ ESOPHAGUS/ STOMACH														
19	Week-4	Lesser omentum Blood supply Lesser sac Relationship of peritoneum Intra & retroperitoneal	Describe greater and lesser omentum	C2			Interactive Lecture/SGD	3	MCQ's	5				
20			Describe the nerve supply of peritoneum	C2										
21			Illustrate anatomy of lesser sac	C2										
22			Explain various peritoneal pouches, recess and ligaments	C2										
23			Discuss intra-peritoneal and retroperitoneal structures	C2										
24		Esophagus Esophageal sphincter	Explain structural anatomy of esophagus	C2										
25			Describe gastro esophageal sphincter	C2										
26		Stomach Pyloric sphincter Blood supply	Describe gross structure of stomach	C2										
27			Discuss function of pyloric sphincter and its relationship	C2										
28			Explain blood supply ,lymphatic drainage of stomach	C2										
29		Surface marking	Identify esophagus land mark from human Models/ charts		P4						Demo	2	OSPE	5
30	Identify Stomach Land mark from human Models/charts			P4										
31	Adopt how to care and handle Models and charts				A	Role Play								
TOPIC: SMALL INTESTINE/ LARGE INTESTINE/ LIVER														
32	Week-5	Duodenum Explanation Blood supply	Write the relations of various parts of duodenum	C1			Interactive Lecture/SGD	3	MCQ's	5				
33			Explain structure of jejunum and ileum	C2										
34			Explain blood supply ,nerve supply and lymphatic drainage of small intestine	C2										
35		Cecum Relationship of cecum Blood supply	Explain structure of cecum	C2										
36			Explain anterior, posterior and medial relation of cecum	C2										
37			Explain blood supply ,nerve supply and lymphatic drainage of cecum	C2										
38		liver Description	Illustrate borders and surfaces of liver	C2										
39			Illustrate visceral surface of liver	C2										
40		peritoneal reflections and ligaments	Describe the peritoneal reflections and associated ligaments of liver	C2										
41		Lobes	Describe lobes and segments of liver	C2										
42		Blood supply	Describe the formation.tributeries and branches of hepatic portal veins	C2										
43		Land marks	Identify land marks of Inesttines and Liver from Models and charts		P4						Demo	2	OSPE	5
44			Adopt how to care and handle Models and charts			A4								



S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items
				C	P	A				
TOPIC: GALLBLADDER/ PANCREAS/ KIDNEY/ URETER/ POSTERIOR ABDOMINAL WALL										
45	Week-6	Gall bladder Blood supply	Describe the structure of gall bladder and its relationship	C2			Interactive Lecture/SGD	3	MCQ's	5
46			Explain the blood supply, nerve supply and lymphatic drainage of gall bladder	C2						
47		Pancreas Blood supply	Describe the structure of pancreas and ductal system	C2						
48			Explain blood supply ,nerve supply of accessory organs of GIT	C2						
49		Kidney Blood supply	Describe renal structures and relationship of right and left kidney	C2						
50			Explain blood supply, nerve supply and lymphatic drainage of renal system	C2						
51		Ureter Relationship	Describe structure of ureter	C2						
52			Explain important relationship of right and left ureter	C2						
53		Posterior abdominal wall Vessels	Explain in detail arteries and veins of posterior abdominal wall	C2						
54			Explain lymphatic drainage of posterior abdominal wall	C2						
55	Land marks	Identify land marks of Gall bladder, Pancreas,kidney from Models and charts		P4		Demo	2	OSPE	5	
56		Adopt how to care and handle Models and charts			A4	Role Play				

S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items
				C	P	A				
TOPIC: PELVIS WALL /MUSCLES/PERINEUM										
57	Week-7	Pelvic wall	Explain in structures of anterior ,posterior and lateral wall of pelvis	C2			Interactive Lecture/SGD	3	MCQ's	5
58			Explain structure of inferior pelvic wall	C2						
59		Sacral plexus	Describe sacral plexus	C2						
60		Lumber plexus	Describe lumber plexus	C2						
61		Sacrum	Explain structure of sacrum	C2						
62		Pelvic floor	Enlist muscles of pelvic floor	C1						
63		Blood /nerve suuply	Explain blood supply, nerve supply and lymphatic drainage of pelvic floor	C2						
64		Sacroiliac joint	Describe structure of sacroiliac joint	C2						
65		Explanation	Explain structure of perineum and its function	C2						
66		Blood /nerve supply	Describe nerve supply of perineum	C2						
67	Land marks	Identify land marks of Pelvis wall and Plexus from Models and charts		P4		Demo	2	OSPE	5	
68		Identify origin and insertion of pelvic floor muscles of sacrum from Models and charts		P4						
69		Identify land marks of scaroiliac joints and ligaments supporting the joints from Models and charts		P4						
70		Identify the bony landmarks of sacrum from Models and charts		P4						
71		Adopt how to care and handle Models and charts			A					Role Play
TOPIC: LOWER LIMB OSTEOLOGY (PELVIS/ FEMUR)										
72	Week-8	Pelvic bone	Explain the anatomical features of pelvic bone	C2			Interactive Lecture/SGD	3	MCQ's	5
73		Femur	Explain the anatomical features of Femur							
74		Bony landmarks	Label the bony land marks of pelvis and Femur iden- pendently		P4		Demo	2	OSPE	5
75		Handling protocol	Follow the protocols of handling the pelvis and femur bone/ model / chart with care			A	Role Play			

S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items
				C	P	A				
TOPIC: LOWER LIMB OSTEOLOGY (FIBULA/TARSALS/ METATARSALS/PHALANGES)										
76	Week-9	Fibula	Explain the anatomical features of Fibula	C2			Interactive Lecture/SGD	3	MCQ's	5
77		tarsals	Describe the anatomical features of tarsals	C2						
78		Metatarsals	Describe the anatomical features of Metatarsals	C2						
79		Phalanges	Explain the anatomical features of Phalanges	C2						
80		Land marks	Label the bony land marks of Fibula, tarsals , Metatarsals and Phalanges idenpendently		P4		Demo	2	OSPE	5
81	Protocol	Follow the protocols of handling the Fibula, tarsals, Metatarsal and Phalanges bone/ model / chart with care			A	Role Play				
TOPIC: LOWER LIMB MYOLOGY (GLUTEAL/ HIP JOINT/ THIGH REGION)										
82	Week-10	Gluteal Region	Describe origin / insertion/location & action of muscles of Gluteal Region	C2			Interactive Lecture/SGD	3	MCQ's	5
83		Hip Joint	Describe origin / insertion/location & action of muscles around Hip Joint	C2						
84		Thigh Region	Describe origin / insertion/location & action of muscles of Thigh Region	C2						
85		Land marks	Label origin, insertion and action of muscles of gluteal, hip joint and thigh region on bone/ model / chart idenpendently		P4		Demo	2	OSPE	5
86		Protocol	Follow the protocols of handling the gluteal , hip and thigh region bone/ model / chart with care			A	Role Play			
TOPIC: LOWER LIMB MYOLOGY (LOWER LEG/ANKLE/FOOT)										
87	Week-11	Lower leg	Describe origin / insertion/location & action of muscles of Lower leg	C2			Interactive Lecture/SGD	3	MCQ's	5
88		Ankle & Foot	Describe origin / insertion/location & action of muscles of Ankle & Foot Region	C2						
89		Land marks	Label origin, insertion and action of muscles of lower leg ,ankle and foot on bone/ model / chart idenpendently		P4		Demo	2	OSPE	5
90		Protocol	follow the protocols of handling the models with care			A	Role Play			

S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items
				C	P	A				
TOPIC: NEUROLOGY (LUMBOSACRAL PLEXUS/SCIATIC NERVE)										
91	Week-12	Lumbosacral plexus	Explain formation of Lumbosacral plexus/nerves origination from Lumbosacral plexus	C2			Interactive Lecture/SGD	3	MCQ's	5
92		Sciatic nerve	Discuss origin , course and distribution of Sciatic nerve	C2						
93		Course and distribution	Label origin , course and distribution of Lumbosacral Plexus and sciatic nerves idependently		P4		Demo	2	OSPE	5
94		Protocols	Follow the protocols of handling the models with care			A	Role Play			
TOPIC: NEUROLOGY (FEMORAL/PUDENDAL/GLUTEAL NERVES)										
95	Week-13	Femoral nerve	Discuss origin , course and distribution of Femoral nerve	C2			Interactive Lecture/SGD	3	MCQ's	5
96		Pudendal nerve	Discuss origin , course and distribution of Pudendal nerve	C2						
97		gluteal nerves nerve	Discuss origin , course and distribution of gluteal nerves nerve	C2						
98		Course and distribution	Label origin , course and distribution of Femoral/ Pudendal/Gluteal nerves idependently		P4		Demo	2	OSPE	5
99		Protocols	Follow the protocols of handling the models with care			A4	Role Play			
TOPIC: NEUROLOGY (C. PERONEAL/TIBIAL/SURAL /PLANTER AND DORSAL NERVES)										
100	Week-14	Common Peroneal nerve	Discuss origin , course and distribution of Common Peroneal nerve	C2			Interactive Lecture/SGD	3	MCQ's	5
101		Tibial nerve	Discuss origin , course and distribution of Tibial nerve	C2						
102		Sural nerve	Discuss origin , course and distribution of Sural nerve	C2						
103		Plantar/Dorsal nerves	Discuss origin , course and distribution of Plantar/Dorsal nerves	C2						
104		Course and distribution	Label origin , course and distribution of Common peroneal, Tibial, sural , Plantar nerves idependently		P4		Demo	2	OSPE	5
105		Adopt how to care and handle Models and charts				A4	Role Play			

S.No	Weeks	Content	Learning Outcomes	Domain			MIT's	Hours	Assesment	No of Items	
				C	P	A					
TOPIC: ANGIOLOGY											
106	Week-15	Arteries of lower limb	Describe Course and distribution of arteries of lower limb	C2			Interactive Lecture/SGD	3	MCQ's	5	
107		Venous Drainage	Describe Venous Drainage of lower limb	C2							
108		lymphatic Drainage	Describe lymphatic Drainage of lower limb	C2							
110		Course and distribution		Label course & distribution of arteries of lower limb independently		P4		Demo	2	OSPE	5
111				Label course & tributaries of veins of lower limb independently		P4					
114				Label lymphatic drainage of lower limb independently		P4					
115				Adopt how to care and handle Models and charts			A				
TOPIC: THORACIC CAVITY											
116	Week-16	Joints of lower extremity	Explain the structure and function of pelvis joints	C2			Interactive Lecture/SGD	3	MCQ's	5	
117			Explain the structure and function of hip joint	C2							
118			Explain the structure and function of knee joint	C2							
123			Explain the structure and function of Ankle & foot joints	C2							
125		Surface anatomy		Label the structure & function of joints of lower limb independently		P4		Demo	2	OSPE	5
126	Adopt how to care and handle Models and charts					A4	Role Play				

RSC-612 PHYSIOLOGY-II 3(2-1)

Course Description

The course is designed to study the function of the human body at the molecular, cellular, tissue and systems levels. The major underlying themes are: the mechanisms for promoting homeostasis; cellular processes of metabolism, membrane function and cellular signaling; the mechanisms that match supply of nutrients to tissue demands at different activity levels; the mechanisms that match the rate of excretion of waste products to their rate of production; the mechanisms that defend the body against injury and promote healing.

These topics are addressed by a consideration of nervous and endocrine regulation of the cardiovascular, hematopoietic, pulmonary, renal, gastrointestinal, and musculoskeletal systems including the control of cellular metabolism. The integrative nature of physiological responses in normal function and disease is stressed throughout the course.

This course will serve as pre requisite for the further courses i.e. exercise physiology, pathology, etc.

Cognitive Domain

By the end of this subject, students should be able to:

1. **Develop an understanding respiratory tract and lung function.**
2. **Explain the process involve in mechanism of breathing.**
3. **Describe the lung volumes and capacities.**
4. **Develop the concept of diffusion of gases across the alveolar membrane and mechanism of transport of oxygen and carbon dioxide in blood.**
5. **Explain the abnormal breathing and the causes and effect of hypoxia and cyanosis.**
6. **Describe the Clinical importance of lung function tests and Causes of abnormal ventilation and perfusion.**
7. **Explain the function of GIT and How the motility and secretions of GIT is controlled.**
8. **Develop the understanding of Functions, motility and secretions of stomach, small intestine and large intestine.**
9. **Discuss the function of liver, bile, gallbladder and pancreas and how it**

contributes in digestion.

10. **Identify the causes of vomiting, diarrhea and constipation.**
11. **Understand the composition, formation and general functions of blood.**
12. **Describe the Structure, function, production and different types of RBC, WBC and platelets.**
13. **Identify the blood groups and their role in blood transfusion and what will be the Complications of blood transfusion with reference to ABO & RH incompatibility.**
14. **Discuss the anemia and its different types.**
15. **Explain the Classification of endocrine glands and its Mechanism of action.**
16. **Describe the function, secretions and mechanism of hormones secreted by endocrine and exocrine glands.**
17. **Understand the diseases or syndromes (Acromegaly, gigantism, dwarfism, Diabetes insipidus, Thyrotoxicosis, myxedema, Pheochromocytoma, Cushing's disease, Adrenogenital syndrome, Diabetes mellitus,) causes by hypersecretion or hyposecretion of hormones.**

Skills Domain

By the end of this subject, students should be able to:

1. **Demonstrate the use of microscope and determine the hemoglobin and ESR.**
2. **Demonstrate the total blood count.**
3. **Demonstrate the clinical examination of chest and sthethography.**
4. **Demonstrate the clinical interpretation of pulmonary volumes and their capacities.**

Affective Domain

By the end of this subject, students should be able to:

1. **Demonstrate punctuality. Follow the specified norms of the IL, SGD teaching & learning.**
2. **Demonstrate the humbleness and use the socially acceptable language during academic and social interactions with human models, colleagues and teachers.**
3. **Make ethically competent decisions when confronted with an ethical, social or moral problem related to clinical examination of chest in professional or personal life.**

TOS -RSC-612 PHYSIOLOGY-II 3(2-1)

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
TOPIC: RESPIRATORY SYSTEM										
1	Week-1	Function of respiratory tract	Differentiate between respiration and breathing	C4			Interactive Lecture/SGD	2	MCQ's	5
2			Discuss the functions of respiratory tract	C2						
3		Respiratory and non-respiratory function of the lungs	Differentiate between respiratory and non-respiratory functions of lung	C4						
4		Mechanics of breathing	Explain the mechanism of breathing	C2						
5		Production & function of surfactant and compliance of lungs	Define surfactant and its function	C1						
6			Explain the compliance of lungs and elastic recoil	C2						
7		Protective reflexes	Enlist the protective reflexes for respiratory system	C1						
8		Lung volumes and capacities including dead space	Define lung volumes and lung capacities	C1						
9			Enlist the different values of lung volumes and capacities	C1						
10			List the volumes that comprise each of the four capacities	C1						
11			Describe changes in the lung volume, alveolar pressure, pleural pressure, and trans-pulmonary pressure during normal breathing	C2						
12			Differentiate between anatomical and physiological dead space in respiratory system	C4						
13			Enlist the factors that can change the dead space	C1						
14	Practical	Perform Clinical Examination of chest		P4		Demo	2	OSPE	5	
15		Demonstrate ability recognize lung volumes and capacities on charts/model Independently		P4						
16		Show respect among teacher and class fellows			A	Role Play				

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
17	Week-2	Diffusion of gases across the alveolar membrane	Describe respiratory unit	C2			Interactive Lecture/SGD	2	MCQ's	5
18			Discuss the mechanism of diffusion of different gases across the alveolar membrane	C2						
19			Discuss the mechanism that prevent the alveolar collapse	C2						
20			Describe the factors that affect the rate of gaseous diffusion through the respiratory membrane	C2						
21		Relationship between ventilation and perfusion	Define ventilation and perfusion	C1						
22			Identify the average V/Q ratio in a normal lung	C1						
23			Describe the relationship between ventilation and perfusion	C2						
23		Mechanism of transport of oxygen and carbon dioxide in blood	Explain the mechanism of transportation of oxygen and carbon dioxide in blood	C2						
24			Define oxygen partial pressure (tension), carbon dioxide partial pressure	C1						
25		Protocols	Demonstrate ability recognize mechanism of gaseous exchange on charts Independently		P4					
26	Follow the protocols of handling with care				A	Role Play				
27	Week-3	Nervous and chemical regulation of respiration	Explain the mechanisms by which respiration is controlled through the nervous system	C2			Interactive Lecture/SGD	2	MCQ's	5
28			Explain the mechanisms by which respiration is controlled through the chemical regulation	C2						
29		Abnormal breathing	Discuss different patterns of abnormal breathing	C2						
30		Hypoxia, its causes and effects	Define hypoxia and enlist its causes and effects on the body	C2						
31		Cyanosis, its causes and effects	Define cyanosis and enlist its causes and effects on the body	C2						
32		Protocols	Demonstrate ability recognize abnormal breathing on subject Independently		P4					
33	Follow the protocols of handling with care				A	Role Play				
TOPIC: CLINICAL MODULE										



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
34	Week-4	Clinical importance of lung function tests	Describe lung function tests and spirometer	C2			Interactive Lecture/SGD	2	MCQ's	5
35			Interpret the Pulmonary Function Test	C2						
36		Causes of abnormal ventilation and perfusion	Enlist the causes of abnormal ventilation and perfusion	C2						
37		Effects on pneumothorax, pleural effusion, and pneumonia	Define pneumothorax, pleural effusion and pneumonia and its effects in the body	C1						
38		Respiratory failure	Define respiratory failure and its consequences	C1						
39		Artificial respiration and uses & effects of O2 therapy	Define artificial respiration and its uses	C1						
40			Describe the role of O2 therapy	C2						
41		Clinical significance of hypoxia, cyanosis, and dyspnea	Describe hypoxia, cyanosis and dyspnea and its clinical significance	C2						
42	lung function tests	Interpret the Pulmonary Function Test Independently			P4	Demo	2	OSPE	5	
43		Perform spirometer under supervision			P2					
44		Follow the protocols of laboratory while performing spirometry			A	Role Play				

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items				
				C	P	A								
TOPIC: BLOOD														
45	Week-5	Composition and general functions of blood	Define blood and its composition including plasma and formed elements	C1			Interactive Lecture/SGD	2	MCQ's	5				
46			Enlist different functions of blood	C1										
47		Plasma proteins their production and function	Define plasma proteins and its functions in blood	C2										
48			Define erythropoiesis	C2										
49		Erythropoiesis and red blood cell function	Describe various components of hematopoietic system including their locations and their functions	C2										
50			Describe the factors regulating erythropoiesis	C2										
51			Explain the role of Erythropoietin in RBC production.	C1										
52			Illustrate the stages of RBC development from pluripotent hematopoietic stem cells to a mature RBC	C2										
53			Discuss the different sites of red blood cell production in body across the life span	C2										
54			Describe the structure, function, life span and normal count of Red Blood Cells	C2										
55			Enlist the functions of RBC's	C1										
56			Describe the role of Vitamin B12 and Folic acid in RBC maturation	C2										
57			Describe the effects of high altitude and exercise on RBC production	C2										
58			Define hematocrit	C1										
59		Structure, function, production and different types of hemoglobin	Define hemoglobin and its structure	C1										
60			Describe the production, function and types of hemoglobin	C2										
61			Describe the concept of Oxygen binding with hemoglobin	C2										
62			Describe the amino acid substitution in sickle cell disease	C2										
63		Practical	Interpret a complete blood count report by identifying the abnormal values			P4					Demo	2	OSPE	5
64			Interpret the normal haemoglobin (Hb) concentration value in the given sample independently			P4								
65	Show respect towards subjects while performing interpretation.				A	Role Play								



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
66	Week-6	Iron absorption storage and metabolism.	Describe the mechanism of iron absorption, its storage and metabolism	C2			Interactive Lecture/SGD	2	MCQ's	5
67		Blood indices, Function, production and type of white blood cells,	Define blood indices	C1						
68			Describe the production, function and types of WBC's	C2						
69			Describe the components of reticulo endothelial system (monocyte-macrophage system)	C2						
70			Describe the role of monocyte macrophage system in immunity	C2						
71			Explain the role of neutrophils, macrophages, basophils, eosinophil and monocytes in providing immunity against infections	C2						
72			Functions of platelets	Describe the production and functions of platelets	C2					
73		Describe the effects of low platelet count		C2						
74		Clotting mechanism of blood	Describe clotting mechanism of blood and role of different clotting factors in blood	C2						
75			Describe the role of Vit K in clotting	C2						
76			Discuss the sequence of processes during blood coagulation	C2						
77		Practical	Identify blood cells under microscope independently		P4		Demo	2	OSPE	5
78			Follow instruction guidelines of laboratory			A	Role Play			
79	Demonstrate good communication skills while performing the task				A					

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items				
				C	P	A								
80	Week-7	Blood groups and their role in blood transfusion	Describe the different types of blood groups and their role in blood transfusion	C2			Interactive Lecture/SGD	2	MCQ's	5				
81			Describe the role of agglutinogens and agglutinins in blood grouping	C2										
82		Complications of blood transfusion with reference to ABO & RH incompatibility.	Describe the ABO and RH system	C2										
83			Explain universal donor and universal recipient blood groups	C2										
84			Describe the different complications of blood transfusion due to ABO or RH incompatibility	C2										
85			Define Rhesus incompatibility and Describe erythro blastosis fetolis	C1										
86		Components of reticulo-endothelial systems, gross and microscopic structure including tonsil, lymph node and spleen.	Describe reticuloendothelial system and the structure and function of tonsils, lymph nodes and spleen	C2										
87		Development and function of reticulo-endothelial system	Describe the development and functions of reticulo-endothelial system	C2										
88		Practical	Interpret the plausible blood groups (A-B O) in children of parents with known blood groups independently		P4						Demo	2	OSPE	5
89			Interpret the types of agglutinins present in individuals with a specific blood group independently		P4									
90	Identify structure of smooth muscles under microscope independently			P4										
91	Follow instruction guidelines of laboratory				A	Role Play								
92	Demonstrate good communication skills while performing the task				A									



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
TOPIC: CLINICAL MODULE										
93	Week-8	Anemia and its different types	Define anemia	C1			Interactive Lecture/SGD	2	MCQ's	5
94			Describe the different types of anemia	C2						
95		Blood indices in various disorders	Explain blood indices in different disorders of blood	C2						
96		Clotting disorders	Explain the different clotting disorders	C2						
97		Immunity	Describe immunity and classify its types	C2						
98			Enlist the tissues that contribute to immunity and explain their function	C1						
99			Enlist the three lines of defenses and outline their properties	C1						
100			Differentiate among innate, acquired, active and passive immunity	C4						
101		Describe the role of T and B lymphocytes role in humoral immunity	C2							
102		Practical	Interpret the diagnosis of anaemia by using red cell indices independently			P4				
103	Observe the process of cross matching				P1					
104	Follow protocols while performing Task				A	Role Play				

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
TOPIC: GASTROINTESTINAL TRACT										
105	Week-9	General functions of GI tract	Define GIT	C1			Interactive Lecture/SGD	2	MCQ's	5
106			Discuss physiological anatomy of GIT	C2						
107			Explain the layers of intestinal wall	C2						
108			Differentiate between hunger and appetite	C4						
109			Describe electrical activity of GIT smooth muscles	C2						
110			Differentiate between slow waves and spike potential	C4						
111		Control of Gastrointestinal functions	Explain enteric nervous system control of GIT	C2						
112			Differentiate between myenteric and meissners plexus	C4						
113			Describe autonomic nervous system in regulation of GIT function	C2						
114			Discuss three types of GIT reflexes	C2						
115			Describe hormonal actions, stimuli and site of action in GIT	C2						
116			Explain control of GIT by local factors	C2						
117		Mastication & Swallowing	Define food ingestion mechanism	C1						
118			Describe mastication and its functions	C2						
119			Identify muscles of mastication	C1						
120			Sketch chewing reflex	C3						
121			Define swallowing	C1						
122			Discuss phases of swallowing	C2						
123	Discuss functions of lower esophageal sphincter		C2							
124	Define dysphagia		C1							
125	Discuss causes of dysphagia		C1							
126	Enumerate types of dysphagia		C1							
127	Practical	Demonstrate ability recognize autonomic nervous system in regulation of GIT function on Model/ Charts Independently		P4		Demo	2	OSPE	5	
128		Adopt how to care and handle model/ chart			A	Role Play				



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
129	Week-10	Stomach: Function, motility & secretions	Describe motor functions of stomach	C2			Interactive Lecture/SGD	2	MCQ's	5
130			Explain the mechanism of formation of chime	C2						
131			Explain the process of emptying of stomach	C2						
132			Describe pyloric pump	C2						
133			Describe the types of gastric glands	C2						
134			Describe types of cells in stomach	C2						
135			Describe characteristics of gastric secretions	C2						
136			Discuss phases and regulation of gastric secretions	C2						
137			Describe anatomy of small intestine	C2						
138		Discuss functions of small intestine	C2							
139		Describe movements of small intestine	C2							
140		Explain mechanism involved in SI motility	C2							
141		Describe small intestine mucosa and glands	C2							
142		Describe secretion, regulation and functions of small intestine enzymes	C2							
143		Explain how Small intestine secretions are controlled	C2							
144		Practical	Identify histological features of stomach		P4		Demo	2	OSPE	5
145	Identify histological features of duodenum			P4						
146	Follow protocols while performing Task				A	Role Play				

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
147	Week-11	Large Intestine: Function, Motility & Secretions	Describe parts of large intestine	C2			Interactive Lecture/SGD	2	MCQ's	5
148			Explain functions of large intestine	C2						
149			Describe movements of large intestine	C2						
150			Define defecation	C1						
151			Explain defecation reflex	C2						
152			Explain the secretions of large intestine	C2						
153			Describe constipation and causes of constipation	C2						
154			Describe diarrhea and its causes	C2						
155			Describe vomiting and vomiting reflex	C2						
156		GIT Dysfunctions	Describe peptic ulcers	C2						
157			Classify peptic ulcers	C2						
158			Explain types of peptic ulcers	C2						
159			Describe symptoms of peptic ulcers	C2						
160			Explain causes and complications of peptic ulcers	C2						
161		Practical	Demonstrate ability recognize types of peptic ulcers on Model/ Charts Independently		P1		Demo	2	OSPE	5
162			Adopt how to care and handle model/ chart			A	Role Play			



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
163	Week-12	Functions of Liver, Gall Bladder & Bile	Describe functions of liver	C2			Interactive Lecture/SGD	2	MCQ's	5
164			Describe physiological anatomy of biliary secretions	C2						
165			Describe the constituents of bile	C2						
166			Explain the form in which bile is stored	C2						
167			Describe mechanism of emptying of Gall bladder	C2						
168			Explain functions of bile salts in fat digestion & absorption	C2						
169			Explain the action of bile salts on intestine	C2						
170			Describe endohepatic circulation of bile salts	C2						
171			Describe role of secretin in controlling bile secretion	C2						
172			Explain liver secretion of cholesterol	C2						
173			Describe the mechanism of gall stone formation	C2						
174			Describe etiology, clinical features and treatment of jaundice	C2						
175		Pancreas & its Function	Describe pancreas	C2			Demo	2	OSPE	5
176			Differentiate exocrine and endocrine functions	C4						
177			Describe the role of pancreatic secretions in digestion	C2						
178	Describe phases and regulation of pancreatic secretions		C2							
179	Practical	Identify histological features of liver independently			P4	Role Play				
180		Identify the histological features of gall bladder under microscope independently			P4					
181		Follow protocol of lab while performing task			A					

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
182	Week-13	Classification of endocrine glands	Define endocrinology	C2			Interactive Lecture/SGD	2	MCQ's	5
183			Describe chemical messengers in the body	C2						
184			Explain types of glands	C2						
185			Classify endocrine glands	C2						
186		Mechanism of action, feedback and control of hormonal secretion	Define hormones	C1						
187			Describe mechanism of action of hormones	C2						
188			Explain hormonal control of endocrine glands	C2						
189			Explain nervous control of endocrine glands	C2						
190		Functions of Hypothalamus	Describe hypothalamic control of pituitary system	C2						
191			Describe hypothalamic control of pituitary gland	C2						
192			Explain hypothalamic hypophyseal portal system	C2						
193			Explain hypothalamic releasing and inhibiting factors effect on pituitary gland	C2						
194		Hormones secreted by ant & post pituitary, their mechanism of action & function	Describe physiological anatomy of pituitary gland	C2						
195			Enumerate hormones of anterior and posterior pituitary	C1						
196			Describe secretion, mechanism of action and regulation of growth hormone	C2						
197			Describe abnormalities of growth hormone	C2						
198			Explain physiological functions and regulation of ADH	C2						
199			Describe abnormalities of ADH	C2						
200			Describe the pathophysiology and clinical features of patient with Acromegaly and Gigantism	C2						
201			Explain effects of panhypopituitarism	C2						
202	Practical	Identify structure of pituitary gland under microscope Independently		P4		Demo	2	OSPE	5	
203		Follow protocol of lab while performing task			A	Role Play				



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
204	Week-14	Functions of thyroid gland	Describe formation, Secretion and transport of thyroid hormones	C2			Interactive Lecture/SGD	2	MCQ's	5
205			Explain mechanism of action of thyroid hormones	C2						
206			Explain the actions of thyroid hormones on cellular metabolism	C2						
207			Describe Physiological effects of Thyroid Hormone on Growth, metabolism and body systems	C2						
208			Discuss pathophysiology of thyroid hormone	C2						
209		Functions of parathyroid gland	Describe physiological anatomy of parathyroid gland	C2						
210			Describe Effect of Parathyroid Hormone on Calcium and Phosphate concentrations	C2						
211			Explain control of parathyroid secretions by Ca ⁺ ions	C2						
212			Explain pathophysiology of parathyroid hormone	C2						
213		Practical	Identify the structure of thyroid gland under microscope independently			P4				
214	Follow protocol of lab while performing task				A	Role Play				
215	Week-15	Calcium metabolism and its function	Describe calcium and phosphate regulation in ECF	C2			Interactive Lecture/SGD	2	MCQ's	5
216			Discuss bone in relation to extracellular Ca ⁺ & Phosphate	C2						
217			Explain the mechanism of remodeling of bone	C2						
218		Calcitonin secretion & function	Describe factors responsible for Calcitonin secretion	C2						
219			Explain effect of calcitonin on Ca ⁺ concentration	C2						
220			Discuss calcitonin effect on elderly	C2						
221		Adrenal cortex & medullary hormones	Describe adrenocortical hormones	C2						
222			Explain synthesis and secretion of adrenocortical hormone	C2						
223			Explain Function of aldosterone	C2						
224			Explain Functions of glucocorticoid	C2						
225			Describe abnormalities of adrenocortical secretions	C2						
226			Describe Cushings disease	C2						
227			Describe adreno genital syndrome	C2						
228	Explain Pheochromocytoma		C2							
229	Practical	Identify the structure of adrenal gland under microscope independently		P4		Demo	2	OSPE	5	
230		Show respect towards subjects while performing task			A	Role Play				

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
231	Week-16	Endocrine function of pancreas	Describe physiological anatomy of pancreas	C2			Interactive Lecture/SGD	2	MCQ's	5
232			Explain insulin and its metabolic effects	C2						
233			Explain control of insulin secretion	C2						
234			Describe glucagon and its effects	C2						
235			Describe the effect somatostatin on glucose and insulin	C2						
236			Explain blood glucose regulation	C2						
237			Describe diabetes mellitus	C2						
238			Explain hypoglycemia	C2						
239			Explain treatment of diabetes mellitus	C2						
240			Function of Thymus	Describe physiological anatomy of thymus	C2					
241		Explain functions of thymus		C2						
242		Describe thymus abnormalities		C2						
243		Endocrine functions of kidney & physiology of growth	Describe physiological anatomy of kidney	C2						
244			Describe hormonal and autacoid control of renal circulation	C2						
245			Enlist important hormones of kidney	C1						
246			Explain the role of erythropoietin and role of kidney in it	C2						
247			Describe the role of kidney in activation of vitamin D	C2						
248			Describe renin angiotensin system	C2						
249			Explain diabetes insipidus	C2						
250		Practical	Demonstrate ability recognize blood glucose regulation on Model/ Charts Independently			P4	Demo	2	OSPE	5
251	Demonstrate ability recognize blood insulin regulation on Model/ Charts Independently				P4					
252	Adopt how to care and handle model/ chart				A	Role Play				

RSC 613 KINESIOLOGY & BIOMECHANICS –II 3(2-1)

Course Description

This course aims to develop appreciation of how mechanical principles can be applied to understand the underlying causes of human movement. It also examines selected anatomical, structural and functional properties of human connective, muscular, and nervous tissues, as well as skeletal structures. Emphasis is placed on the mechanical, neuroregulatory, and muscular events that influence normal and pathological motion.

Cognitive Domain

By the end of this subject, students should be able to:

1. Describe biomechanical behaviour of bone
2. Discuss influence of muscle activity on stress distribution in bone, stress rate dependency in bone, fatigue of bone under repetitive loading
3. Explain bone behavior under loading modes tension, compression, shear, bending, torsion, combined loading
4. Categorize the mechanical aspect of skeletal muscles
5. Differentiate muscle fibers
6. Describe biomechanical behavior of articular cartilage
7. Describe biomechanical behavior of tendon and ligament
8. Describe peripheral nerves and spinal nerve roots
9. Discuss Role of different muscles in shoulder Biomechanics
10. Discuss Role of different muscles in elbow Biomechanics
11. Discuss Role of different muscles in wrist and hand Biomechanics

Skills Domain

By the end of this subject, students should be able to:

1. Demonstrate influence of bone geometry on biomechanical behaviour bone remodelling
2. Demonstrate ability recognize different biomechanical behaviour of bones
3. Demonstrate ability recognize different types of Skeletal muscles
4. Demonstrate ability recognize different muscle fibers
5. Demonstrate ability recognize different joints
6. Practically Perform Neer, Drop Arm, Painful Arc, bear hudge, External Rotation Lag Sign and Speed Test
7. Practically Perform Cozen, Mosely, Valgus Stress, Varus Stress Test and Milking Maneuver Tests
8. Practically Perform Scaphoid Shift, Tinel Sign, Finkelstein, Phalens, Reverse Phalens, TFCC load Test and Froments Test

Affective Domain

By the end of this subject, students should be able to:

1. Demonstrate punctuality.
2. Follow the specified norms of the IL, SGD teaching & learning.
3. Demonstrate the humbleness and use the socially acceptable language during academic and social interactions with human models, colleagues and teachers.
4. Demonstrate ethically competent decisions when confronted with an ethical, social or moral problem related to professional or personal life.

TOS -RSC 603 KINESIOLOGY & BIOMECHANICS-I 3(2-1)

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
TOPIC: BIOMECHANICS OF BONE										
1	Week-1	Composition	Describe the composition of bone	C2			Interactive Lecture/SGD	2	MCQ's	5
2		Characteristic	Discuss the characteristic of bone	C2						
3		Biomechanical behavior	Describe biomechanical behavior of bone	C2						
4		Practical	Demonstrate ability recognize different biomechanical behavior of bones on Model/ Charts Independently		P4		Demo	2	OSPE	5
5			Adopt how to care and handle model/ chart			A	Role Play			
6	Week-2	Bone behavior, under loading, modes, bone behavior under loading modes	Explain bone behavior under loading modes tension, compression, shear, bending, torsion, combined loading	C2			Interactive Lecture/SGD	2	MCQ's	5
7		Influence of muscle activity	Discuss influence of muscle activity on stress distribution in bone, stress rate dependency in bone, fatigue of bone under repetitive loading	C2						
8		Practical	Demonstrate influence of bone geometry on biomechanical behavior bone remodelling		P4		Demo	2	OSPE	5
9			Adopt how to care and handle model/ chart			A	Role Play			
TOPIC: BIOMECHANICS OF MUSCLE										
10	Week-3	Definition	Describe skeletal muscles	C2			Interactive Lecture/SGD	2	MCQ's	5
11		Structural classification	Outline the structural classification of skeletal muscles	C1						
12		Functional classification	Enlist the functional classification of skeletal muscles	C1						
13		Mechanical properties	Categorize the mechanical aspect of skeletal muscles	C3						
14		Practical	Demonstrate ability recognize different types of Skeletal muscles on Model/ Charts Independently		P4		Demo	2	OSPE	5
15	Adopt how to care and handle model/ chart				A	Role Play				
16	Week-4	Structure of skeletal muscle	Describe composition and structure of skeletal muscle	C2			Interactive Lecture/SGD	2	MCQ's	5
17		Muscle contraction	Explain molecular basis of muscle contraction	C2						
18		Practical	Demonstrate mechanics of muscle contraction		P4		Demo	2	OSPE	5
19			Demonstrate ability recognize different muscle fibers on Model/ Charts Independently		P4					
20			Adopt how to care and handle model/ chart			A	Role Play			

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
21	Week-5	Force production	Illustrate force production in muscle	C2			Interactive Lecture/SGD	2	MCQ's	5
22		Muscle fibers	Differentiate muscle fibers	C4						
23		Muscle injuries	Explain muscle injuries	C2						
24		muscle remodeling	Explain muscle remodeling	C2						
25		Practical	Demonstrate ability recognize muscle remodeling on Model/ Charts Independently		P4		Demo	2	OSPE	5
26			Adopt how to care and handle model/ chart			A	Role Play			
TOPIC: BIOMECHANICS OF ARTICULAR CARTILAGE										
27	Week-6	Biomechanical behavior	Describe biomechanical behavior of articular cartilage	C2			Interactive Lecture/SGD	2	MCQ's	5
28		Structural classification	Describe articulation/joint	C2						
29		Structural classification	Outline the structural classification of joints	C1						
30		Functional classification	Enlist the functional classification of joints	C1						
31		Mechanical	Categorize the mechanical aspect of joint articulation	C3						
32		Practical	Demonstrate ability recognize dfferent joints on Model/ Charts Independently		P4		Demo	2	OSPE	5
33	Adopt how to care and handle model/ chart				A	Role Play				
TOPIC: BIOMECHANICS OF TENDON AND LIGAMENTS										
34	Week-7	Biomechanical behavior of ligaments and tendon	Describe biomechanical behavior of tendon and ligament	C2			Interactive Lecture/SGD	2	MCQ's	5
35		Structural classification	Outline the structural classification of tendon & ligament	C1						
36		Functional classification	Enlist the functional classification of tendon & ligament	C1						
37		Mechanical	Categorize the mechanical aspect of tendon & ligament	C3						
38		Practical	Demonstrate ability recognize structure of tendon and ligaments on Model/ Charts Independently		P4		Demo	2	OSPE	5
39			Adopt how to care and handle model/ chart			A	Role Play			

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
TOPIC: BIOMECHANICS OF PERIPHERAL NERVES AND SPINAL NERVE ROOT										
40	Week-8		Describe peripheral nerves and spinal nerve roots	C2			Interactive Lecture/SGD	2	MCQ's	5
41		Structural classification	Outline the structural classification of peripheral nerves and spinal nerve roots	C1						
42		Functional classification	Enlist the functional classification of ten peripheral nerves and spinal nerve roots	C1						
43		Mechanical	Categorize the mechanical aspect of peripheral nerves and spinal nerve roots	C4						
44		Biomechanical behavior of peripheral nerve	Describe biomechanical behavior of peripheral nerve	C2						
45		Practical	Demonstrate ability recognize spinal and peripheral nerves on Model/ Charts Independently		P4		Demo	2	OSPE	
46			Show respect among teacher and class fellows			A	Role Play			
TOPIC: BIOMECHANICS OF SHOULDER										
47	Week-9	Structure	Explain structure of shoulder joint	C2			Interactive Lecture/SGD	2	MCQ's	5
48		Joint type	Discuss joint type and degree of freedom	C2						
49		ROM	Enlist shoulder ROM	C1						
50		Practical	Demonstrate movements of shoulder joint Independently		P4		Demo	2	OSPE	
51			Practically Perform Neer Test Independently		P4					
52			Practically Perform Drop Arm Test Independently		P4					
53			Practically Perform Painful Arc Test Independently		P4					
54			maintain proper positioning and show respect towards subjects			A	Role Play			

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
55	Week-10	Roles	Discuss Role of different muscles in shoulder Biomechanics	C2			Interactive Lecture/SGD	2	MCQ's	5
56		Stability	Differentiate between Shoulder static stability and dynamic stability	C4						
57		Abnormality	Outline shoulder biomechanical Abnormalities	C1						
58		Common lesions of shoulder joint	Discuss loads and common lesions of shoulder joint	C2						
59		Practical	Demonstrate biomechanical assessment of shoulder		P4		Demo	2	OSPE	5
60			Practically Perform Belly Press Test Independently		P4					
61			Practically Perform bear hudge Test Independently		P4					
62			Practically Perform External Rotation Lag Sign Test Independently		P4					
63			Practically Perform Speed Test Independently		P4					
64			maintain proper positioning and show respect towards subjects			A	Role Play			
TOPIC: BIOMECHANICS OF ELBOW JOINT										
65	Week-11	Structure of elbow joint	Explain structure of elbow joint	C2			Interactive Lecture/SGD	2	MCQ's	5
66		Joint Type	Discuss joint type and degree of freedom	C2						
67		ROM	Enlist elbow ROM	C1						
68		Practical	Demonstrate biomechanical assessment of elbow		P4		Demo	2	OSPE	5
69			Demonstrate movements of elbow joint Independently		P4					
70			Perform Cozen Test Independently		P4					
71			Perform Mosely Test Independently		P4					
72		maintain proper positioning and show respect towards subjects			A	Role Play				

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items	
				C	P	A					
73	Week-12	Abnormality	Outline elbow biomechanical Abnormalities	C1			Interactive Lecture/SGD	2	MCQ's	5	
74		Roles	Discuss Role of different muscles in elbow Biomechanics	C2							
75		Common lesions of elbow joint	Discuss loads and common lesions of elbow joint	C2							
76		Stability	Differentiate between elbow static stability and dynamic stability	C4							
77		Practical		Perform Valgus Stress Test Independently		P4		Demo	2		OSPE
78				Perform Varus Stress Test Independently		P4					
79				Perform Milking Maneuver Test Independently		P4					
80				maintain proper positioning and show respect towards subjects			A	Role Play			
TOPIC: BIOMECHANICS OF WRIST JOINT/ HAND											
81	Week-13	Structure of wrist joint	Explain structure of wrist joint	C2			Interactive Lecture/SGD	2	MCQ's	5	
82		Structure of joint of hand	Explain structure of joints of hand	C2							
83		Joint Type	Discuss joint type and degree of freedom in Wrist and Hand	C2							
84		ROM	Enlist Wrist & Hand ROM	C1							
85		Practical		Demonstrate biomechanical assessment of wrist and Hand		P4		Demo	2		OSPE
86				Demonstrate movements of elbow joint Independently		P4					
87				Perform Scaphoid Shift Test Independently		P4					
88				Perform Tinel Sign Test Independently		P4					
89	Perform Finkelstein Test Independently		P4								
90	maintain proper positioning and show respect towards subjects			A	Role Play						



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
91	Week-14	Roles	Discuss Role of different muscles in Wrist & Hand Biomechanics	C2			Interactive Lecture/SGD	2	MCQ's	5
92		Abnormality	Outline Wrist & Hand biomechanical Abnormalities	C1						
93		Common lesions of wrist and hand joint	Discuss loads and common lesions of wrist and hand joint	C2						
94		Stability	Differentiate between Wrist & Hand static stability and dynamic stability	C4						
95		Practical	Perform Phalens Test Independently		P4		Demo	2	OSPE	5
96			Perform Reverse Phalens Test Independently		P4					
97			Perform TFCC load Test Independently		P4					
98			Perform Froments Test Independently		P4					
99			maintain proper positioning and show respect towards subjects			A	Role Play			
TOPIC: FACTORS INFLUENCE RELATIVE MOBILITY AND STABILITY OF UPPER EXTREMITY ARTICULATION										
100	Week-15	Anatomical structure affects	Explain how anatomical structure affects movement capabilities of upper-extremity articulations.	C2			Interactive Lecture/SGD	1	MCQ's	2
101		Influencing factors	Identify factors influencing the relative mobility and stability of upper-extremity articulations.	C1						
TOPIC: ACTIVE MUSCLES DURING SPECIFIC UPPER EXTREMITY MOVEMENTS										
102	Week-15	Muscle Activity	Explain the muscles that are active during specific upper extremity movements	C2			Interactive Lecture/SGD	1	MCQ's	2
103			Discuss in detail their various roles during each movement	C1						
104		Practical	Demonstrate ability recognize structure affect movements on Model/ Charts Independently		P4		Demo	2	OSPE	5
105	Demonstrate good communication skills while performing the task				A	Role Play				
TOPIC: BIOMECHANICAL CONTRIBUTIONS TO COMMON INJURIES OF THE UPPER EXTREMITY										

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
106	Week-16	Injury	Discuss the probability of injuries in upper limb	C2			Interactive Lecture/SGD	2	MCQ's	5
107		Conditions	Clarify the different factors influencing common conditions of upper extremity	C3						
108		Common injuries	Classify the common injuries to shoulder, elbow and wrist and hand	C2						
109			Enlist in detail common injuries at shoulder joint.	C1						
110			Outline in detail common injuries at elbow joint	C1						
111			Outline in detail common injuries at wrist and hand joint	C1						
112		Practical	Demonstrate ability recognize common upper limb injuries on Model/ Charts Independently		P4		Demo	2	OSPE	5
113			Demonstrate good communication skills while performing the task			A	Role Play			

RSC-614 ENGLISH-II 3(3-0)

Course Description

The course gives a thorough understanding of the four skills: listening, speaking, reading and writing with special focus on skimming, scanning, intensive and extensive reading and presentation skill. In addition it encompasses the letter writing: memorandum, meeting minutes, job application and CV to assist them in their real life communication needs.

Cognitive Domain

By the end of this subject, students should be able to:

1. **Distinguish Descriptive, narrative, expository and Narrative Paragraphs**
2. **Differentiate Narrative, Descriptive, Reflective and Expository Essay**
3. **Design the format of Job Application**
4. **Understand the types of translation**
5. **Discuss Skimming and Scanning, intensive and Extensive, and speed reading**
6. **Construct a formal format of letter and memo**
7. **Differentiate Letter and Memo**
8. **Understand the Do's and Don'ts in Presentation**

Skills Domain

By the end of this subject, students should be able to:

1. **Practice on general topics and every-day conversation with questions answers sessions.**
2. **Give presentations individually and in groups to showcase the latent talent**
3. **Organize the procedure to improve their communication skills**

Affective Domain

By the end of this subject, students should be able to:

1. **punctuality. Follow the specified norms of the IL, SGD teaching & learning.**
2. **Demonstrate the humbleness and use the socially acceptable language during academic and social interactions with human models, colleagues and teachers.**
3. **Demonstrate ethically competent decisions when confronted with an ethical, social or moral problem related to professional or personal life.**

TOS -RSC-614 ENGLISH-II 3(3-0)

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
TOPIC: PARAGRAPH WRITING										
1	Week-1	Definition	Define Paragraph	C1			Interactive Lecture/SGD	3	MCQ's	5
2		Principles	Explain Unity, Order and Variety of Paragraph	C2						
3		Structure/Organization	Identify Topic sentence, supporting sentences and concluding sentence	C2						
4		Loose and Periodic Sentences	Discuss Loose and Periodic Sentences.	C2						
5	Week-2	Types	Distinguish Descriptive, narrative, expository and Narrative Paragraphs	C4			Interactive Lecture/SGD	3	MCQ's	5
6		Essentials	Discuss echo words, connectives and diction in paragraph writing	C2						
TOPIC: ESSAY WRITING										
7	Week-3	Writing process	Explain writing process	C2			Interactive Lecture/SGD	3	MCQ's	5
8		Introduction	Explain Essay Writing							
9		Planning	Explain Brainstorming, Clustering, outline and Thesis Statement in Essay	C2						
10	Week-4	Essentials	Explain Unity, coherence and Balance/Proportion of an Essay	C2			Interactive Lecture/SGD	3	MCQ's	5
11		Structure/Format	Understand Introduction, Body and Conclusion of an Essay							
12	Week-5	Tone and Diction	Comprehend the tone and diction of an essay	C2			Interactive Lecture/SGD	3	MCQ's	5
13		Classes	Differentiate Narrative, Descriptive, Reflective and Expository Essay	C4						
TOPIC: CV AND JOB APPLICATION										
14	Week-6	Definition	Define CV and Job Application	C1			Interactive Lecture/SGD	3	MCQ's	5
15		CV Format	Design the format of CV	C6						
16		Job Application Format	Design the format of Job Application	C6						
17		Function	Understand the use of CV and Job Application	C2						
18	Week-7	Do's and Don'ts	Discuss the Do's and Don'ts in CV and Job Application	C2			Interactive Lecture/SGD	3	MCQ's	5
19		Differentiation	Differentiate CV and Résumé	C4						
TOPIC: TRANSLATION SKILLS										



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
20	Week-8	Definition	Define Translation	C1			Interactive Lecture/SGD	3	MCQ's	5
21		Function	Explain the function of translation	C2						
22		Classification	Understand the types of translation	C2						
TOPIC: PARAGRAPH WRITING										
23	Week-9	Exercise	Translate Idiomatic texts from Urdu to English	C2			Interactive Lecture/SGD	3	MCQ's	5
24		Meaning Types	Discuss different shades of meaning	C2						
25		Practice	Practice on translating texts from Source to Target Language		P4					
TOPIC: STUDY SKILLS										
26	Week-10	Reading Process	Understand the Reading Process	C2			Interactive Lecture/SGD	3	MCQ's	5
27		Types of reading	Discuss Skimming and Scanning, intensive and Extensive, and speed reading	C2						
28		Comprehension procedure	Explain Comprehension and its procedure	C2						
29		Definition	Define Summary and précis writing	C1						
30		Essentials	Know the essentials in Summary and précis writing	C2						
31		Differentiation	Differentiate summary and précis	C4						
32	Week-11	Practice	Practice on different reading exercises		P4		Demo	Formative assessment		
TOPIC: ACADEMIC SKILLS										
33	Week-12	Introduction	Introduce academic skills	C1			Interactive Lecture/SGD	3	MCQ's	5
34		Formal Format	Construct a formal format of letter and memo	C6						
35		Differentiation	Differentiate Letter and Memo	C4						
36	Week-13	Abbreviation in formal letter	Understand the abbreviations used in writing a formal letter	C2			Interactive Lecture/SGD	3	MCQ's	5
37		Definition	Define Minutes of meeting	C1						
38		Contents in Meeting Minutes	Discuss the contents of meeting minutes	C2						
39	Week-14	Importance	Know the Importance of library and internet	C2			Interactive Lecture/SGD	3	MCQ's	5
40		Practice	Utilize the Library and internet		P4					
TOPIC: PRESENTATION SKILLS										

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
41	Week-15	Definition	Define Presentation Skills	C1			Interactive Lecture/SGD	3	MCQ's	5
42		Types	Discuss different types of presentation	C2						
43		Structure	Explain the structure presentation	C2						
44		Essentials	Discuss the stage fright and its antidotes	C2						
45		Do's and Don'ts in Presentation	Understand the Do's and Don'ts in Presentation	C2						
46	Week-16	Practice	Give presentations individually and in groups to showcase the latent talent		P4		Demo	3	Formative assessment	5
47		Body Language	Communicate through body language		P1					
48		Communication Skills	Organize the procedure to improve their communication skills			A				
49		Q & A Session	Respond to different questions in the Q & A session			A				

RSC-615 ISLAMIC STUDIES / ETHICS 2(2-0)

Course Description

This course is aimed at To provide Basic information about Islamic Studies. IT enhance understanding of the students regarding Islamic Civilization. This course will improve Students skill to perform prayers and other worships. it also help and enhance the skill of the students for understanding of issues related to faith and religious life.

Cognitive Domain

By the end of this subject, students should be able to:

1. **Discuss Pre-Islamic Arabia and Arabs**
2. **Describe the life and times of prophet Muhammad PBUH before prophet-hood.**
3. **Discuss the necessity of Divine guidance in the light of Quran.**
4. **Discuss concept of state in Islam**
5. **Discuss Prophet's mission in medina (Post Hijra Period)**
6. **Explain the concept of worship and spread of Islam**
7. **Explain the moral law of Islam (Qaanon - E - Ikhaq)**

Affective Domain

By the end of this subject, students should be able to:

1. **Demonstrate punctuality.**
2. **Follow the specified norms of the IL, SGD teaching & learning.**
3. **Demonstrate the humbleness and use the socially acceptable language during academic and social interactions with colleagues and teachers.**
4. **Demonstrate ethically competent decisions when confronted with an ethical, social or moral problem related to professional or personal life.**

TOS -RSC-615 ISLAMIC STUDIES / ETHICS 2(2-0)

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
TOPIC: THE PRE-ISLAMIC ARABIA AND THE ARABS										
1	Week-1	Geography	Discuss the geography of Arabia	C2			Interactive Lecture/SGD	2	MCQ's	5
2		Peninsula	Explain peninsula	C2						
3		Nature of nomadic life	Discuss a nomadic life	C2						
4	Week-2	Trade	Explain the source of income of the Arabs	C2			Interactive Lecture/SGD	2	MCQ's	5
5		Religion, Politics.	Explain the life of romans.	C2						
6			Discuss the life of Persians.	C2						
7		Discuss the life of Egyptians.	C2							
8	Week-3	Concept of ignorance, Contemporary view.	Discuss the need of change in the age of ignorance	C2			Interactive Lecture/SGD	2	MCQ's	5
TOPIC: THE LIFE AND TIMES OF PROPHET MUHAMMAD PBUH BEFORE PROPHETHOOD.										
9	Week-4	Idol worship, Slavery, Female infanticide, Injustice, Discrimination, Tribal system.	Discuss the social order of the Arabs	C2			Interactive Lecture/SGD	2	MCQ's	5
10	Week-5	Purpose, Promised prophet, Secular level, Religious level.	Discuss the role of prophet.	C2			Interactive Lecture/SGD	2	MCQ's	5
11		570 AC Year of elephants. Quran's view of history.	Describe the major event in the year of birth	C2						
12	Week-6	Idol worship. The Family of Quraysh.	Discuss the background of idol worship.	C2			Interactive Lecture/SGD	2	MCQ's	5
13		Monotheist, Darunadwa, 1st business trip, 1st marriage Role of Abu talib, Illiterate prophet, Non gentile, In the cave.	Discuss the life of prophet Muhammad before prophet hood.	C2						
TOPIC: THE NECESSITY OF DIVINE GUIDANCE IN THE LIGHT OF QURAN.										
14	Week-7	Questions, Problems, Solutions, Contemporary view.	Discuss the need for divine guidance.	C2			Interactive Lecture/SGD	2	MCQ's	5
15		Reason, Science, Philosophy, Contemporary discoveries in the fields of science.	Discuss revelation with intellect.	C2						



S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
16	Week-8	Introduction, Temporary, Fabrication, Invalidity	Discuss Quran's view about the precious books	C2			Interactive Lecture/SGD	2	MCQ's	5
TOPIC: STATE IN ISLAM										
17	Week-9	Oral Tradition, Compilation, Preservation and propagation, Authenticity, Finality, Itmam e hujjat	Explain the process of perfection of the Qur'an.	C2			Interactive Lecture/SGD	2	MCQ's	5
18		Metaphorical, Makah surahs, Medina surah.	Discuss the style and structure of Qur'an	C2						
19		Definition, Its role in the early development of Islamic narrative, Contemporary world.	Discuss the scope of interfaith.	C2						
TOPIC: PROPHET'S MISSION IN MEDINA (POST HIJRA PERIOD)										
20	Week-10	Territory, Climate, Agriculture, The Ansar	Analyze the territory medina	C2			Interactive Lecture/SGD	2	MCQ's	5
21		Background, Significance, Scope.	Discuss the hijrah	C2						
22	Week-11	Change of qibla, Inter religious dialogue.	Discuss the qibla controversy.	C2			Interactive Lecture/SGD	2	MCQ's	5
23		Chief hypocrite.	Discuss the role of hypocrites	C1						
24		Incident of necklace.	Explain the moral teachings of Islam	C1						
25	Week-12	Banu Israel Difference between jews and banu Israel.	Discuss the history of the Jews (of medina).	C2			Interactive Lecture/SGD	2	MCQ's	5
26		Introduction, Significance, Sovereignty, Adam A.S and satan.	Discuss the concept of khilafat.	C2						
27		Purpose, Charter of medina People of the book, The Khilafat e Rashida period.	Discuss the concept of state.	C2						
TOPIC: THE CONCEPT OF WORSHIP AND SPREAD OF ISLAM										

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items	
				C	P	A					
28	Week-13	Definition, Scope, Philosophy of Unity. (TAWHEED)	To discuss the concept of worship	C2			Interactive Lecture/SGD	2	MCQ's	5	
29		Spiritual Aspect,Social Aspect.	Discuss the scope of Namaz	C2							
30		Discuss the scope of Zakaat	C2								
31			Discuss the scope of hajj	C2							
32	Week-14	Preaching and Persuasion. Concept of IKRAH	Discuss the concept of da'wah	C2			Interactive Lecture/SGD	2	MCQ's	5	
33		Letters of the prophet to the kings.	Discuss the letters of the prophet to the kings.	C2							
34		Purpose of da'wah.	Explain the purpose of da'wah.	C2							
35		From Medina to idea of Pakistan.	Explain the spread of Islam.	C2							
36		Purpose of da'wah.	Explain the purpose of da'wah.	C2							
TOPIC: THE MORAL LAW OF ISLAM (QAANON - E - IKHAQ)											
37	Week-15	Purpose of creation. Believe in Allah	Discuss the purpose of creation.	C2			Interactive Lecture/SGD	2	MCQ's	5	
38		Believe in the last prophet	Individual human rights.	Explain the basic rights of individual human.	C2						
39		Ethics	Discuss the importance of ethics	C2							
40	Week-16	Equality,Justice, Brotherhood, Respect, Empowerment	Discuss the dignity of human life	C2			Interactive Lecture/SGD	2	MCQ's	5	
41		International level.	Explain the scope of Islam	C2							
42		Amar bil maroof, Nahi anil munkar, Hadd, Ta'zir, Role of qazi OR judge	Discuss the moral of Islam.	C2							

RSC-616 MEDICAL PHYSICS 3(2-1)

Course Description

This course will cover the basic principal of Physics which are applicable in medical equipment used in Physical therapy. Also help to understand the fundamentals of currents, sound waves, Heat & its effects, electromedical radiations and their effects as well as their application in physical therapy.

Cognitive Domain

By the end of this subject, students should be able to:

1. Explain electricity and magnetism
2. Describe static electricity
3. Discuss Gold Leaf Electroscope
4. Differentiate different type of capacitor
5. Differentiate different current types
6. Differentiate different type of Resistance
7. Explain battery and cell
8. Describe electromagnetism
9. Explain Faraday's Law
10. Differentiate different type of Transformers
11. Explain dynamometer
12. Explain electromechanics
13. Discuss types of low frequency current
14. Discuss types of medium frequency current
15. Discuss types of high frequency current
16. Explain sound waves
17. Describe heat and its transmission
18. Explain electromagnetic radiation
19. Describe safety in biomedical instruments
20. Explain radiation protection

Skills Domain

By the end of this subject, students should be able to:

1. Demonstrate ability recognize Conductor and insulator
2. Demonstrate ability recognize Capacitors and Resistance in Parallel and Series
3. Demonstrate ability recognize batteries
4. Demonstrate ability generate magnetic field through Electric Current
5. Demonstrate ability recognize different types Transformer
6. Demonstrate ability recognize different types dynamometer
7. Demonstrate ability recognize Half wave and Full Wave Rectification
8. Demonstrate ability recognize Low, medium and High frequency currents on Charts Independently
9. Demonstrate ability recognize transmission of heat on Charts Independently
10. Demonstrate ability differentiate between concave, convex mirror and lenses and prisms
11. Demonstrate ability recognize rays/ waves on Charts Independently
12. Demonstrate ability recognize Electric shock and Earth shock on Charts Independently
13. Demonstrate ability recognize Internal and external hazards on Charts Independently

Affective Domain

By the end of this subject, students should be able to:

1. Demonstrate punctuality.
2. Follow the specified norms of the IL, SGD teaching & learning.
3. Demonstrate the humbleness and use the socially acceptable language during academic and social interactions with human models, colleagues and teachers.
4. Demonstrate ethically competent decisions when confronted with an ethical, social or moral problem related to professional or personal life.

TOS -RSC-616 MEDICAL PHYSICS 3(2-1)

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
TOPIC: ELECTRICITY AND MAGNETISM/ STATIC ELECTRICITY										
1	Week-1	Atom	Define atom	C1			Interactive Lecture/SGD	2	MCQ's	5
2			Describe the structure of atom	C2						
3			Differentiate the properties of electron, proton, and neutron	C4						
4		Electricity And Magnetism:	Define conduction and convection	C1						
5			Explain the Electron Theory/Displacement Current	C2						
6			Compare the properties of Conductors and Insulators	C4						
7			Define Static Electricity	C1						
8			Explain Electrostatic field	C2						
9			Differentiate Charging by Conduction and Convection	C4						
10		Practical	Demonstrate ability recognize Conductor and insulator on Model/ Charts Independently		P4		Demo	2	OSPE	5
11			Show respect among teacher and class fellows			A	Role Play			
TOPIC: GOLD LEAF ELECTROSCOPE/ CAPACITOR										
12	Week-2	Static Electricity	Describe Gold leaf Electroscope	C2			Interactive Lecture/SGD	2	MCQ's	5
13			Construct the structure of Gold leaf	C3						
14			Analyze the uses Gold leaf for detecting the charge and types of charge	C4						
15			Define capacitor	C1						
16		Capacitor	Explain the structure of capacitor	C2						
17			Differentiate between the Parallel and Series Combination of Capacitors	C4						
18			Compare the charging and Discharging of Capacitor	C4						
19			Explain Oscillating discharge of capacitor	C2						
20			Practical	Demonstrate ability recognize Capacitors in Parallel and Series on Model/ Charts Independently		P4		Demo	2	OSPE
21		Show respect among teacher and class fellows				A	Role Play			
TOPIC: CURRENT ELECTRICITY/ RESISTANCE										

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
22	Week-3	Current	Define Current	C1			Interactive Lecture/SGD	2	MCQ's	5
23			Explain types of Currents	C2						
24			Explain the chemical effects of Currents	C2						
25			Explain the Ohm's Law with formula	C2						
26			Draw a graph for Ohmic and Non-Ohmic Conductor	C2						
27			Resistance	Define Resistance	C1					
28		Explain Resistivity and specific resistance with formula		C2						
29		Differentiate between the Parallel and Series Combination of Resistance		C4						
30		Practical		Demonstrate ability recognize Resistance in Parallel and Series on Model/ Charts Independently		P4		Demo	2	OSPE
31			Show respect among teacher and class fellows			A	Role Play			
32										
32	Week-4	Cell and Batter	Define Cell and Battery	C1			Interactive Lecture/SGD	2	MCQ's	5
33			Explain the types of batteries (Simple Voltage Cell Wet and dry Lachlanhe Cell)	C2						
34			Differentiate between the Parallel and Series Combination of Cells	C4						
35			Thermal effects	Explain Thermal effects of current	C2					
36		Explain Electrolysis and Electrolytic burns		C2						
37		Ionization of gases	Explain Ionization of gases and Thermionic emission	C2						
38			Explain Electronic tubes Diodes and Triodes	C2						
39		Practical	Demonstrate ability recognize batteries on Model/ Charts Independently		P4		Demo	2	OSPE	5
40			Show respect among teacher and class fellows			A	Role Play			
TOPIC: ELECTROMAGNETISM										

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items					
				C	P	A									
41	Week-5	Electromagnetism	Define Electromagnetism	C1			Interactive Lecture/SGD	2	MCQ's	5					
42			Explain the Molecular theory of magnetism	C2											
43			Explain the Magnetic effect of an electric current	C2											
44			Explain the Electromagnetic induction	C2											
45			Explain the Moving iron type, hot wire type and Thermo-couple type meter	C2											
46		High frequency and alternate current	Explain the Measurement of high frequency and alternate current with meters	C2											
47	Practical		Demonstrate ability generate magnetic field through Electric Current Independently		P4		Demo	2	OSPE	5					
48			Show respect among teacher and class fellows			A	Role Play								
TOPIC: FARADAY'S LAW/ TRANSFORMER															
49	Week-6	Faraday's law	Define Faraday's law and Lenses law	C1			Interactive Lecture/SGD	2	MCQ's	5					
50			Explain Faradays law and Lenses law with formula	C2											
51			Differentiate Between Mutual and Self Induction	C4											
52		Transformer	Define Transformer	C1											
53			Explain the Construction of Transformer	C2											
54			Differentiate between the step up and Step down Transformers	C4											
55		Practical		Demonstrate ability recognize different types Transformer on Model/ Charts Independently		P4						Demo	2	OSPE	5
56	Show respect among teacher and class fellows					A	Role Play								
TOPIC: DYNAMOMETER															
57	Week-7	Dynamomete	Define dynamometer	C1			Interactive Lecture/SGD	2	MCQ's	5					
58			Explain the structure of dynamometer	C2											
59			Differentiate between AC and DC dynamometer	C4											
60		Practical		Demonstrate ability recognize different types dynamometer on Model/ Charts Independently		P4						Demo	2	OSPE	5
61				Show respect among teacher and class fellows							A	Role Play			
TOPIC: ELECTRO MECHANICS															

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items				
				C	P	A								
62	Week-8	Electromechanics/ Rectification	Define Electromechanics/ Rectification	C1			Interactive Lecture/SGD	2	MCQ's	5				
63			Explain Current for Treatment	C2										
64			Differentiate between Half wave and Full Wave Rectification	C4										
65			Explain Surging of current Lewis, surger and valve surger	C2										
66			Explain Metronome interrupter and Reverse Jones motor interrupter	C2										
67			Explain Vibrations and Multivibrators circuit	C2										
68		Practical	Demonstrate ability recognize Half wave and Full Wave Rectification on Charts Independently		P4		Demo	2	OSPE	5				
69	Show respect among teacher and class fellows				A	Role Play								
TOPIC: LOW FREQUENCY CURRENT														
70	Week-9	Low frequency	Define Low frequency current	C1			Interactive Lecture/SGD	2	MCQ's	5				
71			Explain the types of Sinusoidal current	C2										
72			Describe Faradic current	C2										
73		Constant and interrupted	Discuss Galvanic current	C2										
74		Low frequency	Explain Diadynamic current TENS	C2										
75			Describe Smart Bristow faradic coil	C2										
76			Explain Super imposed current and their graphical resenta-tion	C2										
77			Compare the frequency of different currents	C2										
78		Practical	Demonstrate ability recognize Low frequency currents on Charts Independently		P4						Demo	2	OSPE	5
79	Show respect among teacher and class fellows				A	Role Play								
TOPIC: MEDIUM FREQUENCY CURRENT														
80	Week-10	Medium frequency current	Define the Medium frequency current	C2			Interactive Lecture/SGD	2	MCQ's	5				
81			Explain Interferential and Russian Currents	C2										
82			Differentiate the Frequencies of Interferential and Russian Current	C4										
83		Practical	Demonstrate ability recognize medium frequency currents on Charts Independently		P4						Demo	2	OSPE	5
84			Show respect among teacher and class fellows			A					Role Play			

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items				
				C	P	A								
TOPIC: HIGH FREQUENCY CURRENT														
85		Spark Valves Transistors	Define High frequency current	C1			Interactive Lecture/SGD	1	MCQ's	2				
86			Explain the production of HFC (Spark Valves Transistors)	C2										
87		Waves	Differentiate Long waves, medium waves short waves and micro waves	C4										
TOPIC: SOUND WAVES														
88	Week-11	Production and characteristic	Define Sound	C1			Interactive Lecture/SGD	1	MCQ's	2				
89			Explain the Production and characteristics of Sound Wave	C2										
90			Differentiate between Infrasonic and Ultrasonic	C4										
91		Reflection and refraction	Differentiate Reflection and refraction of sound waves	C4										
92			Explain Interference of sound waves	C2										
93			Practical	Demonstrate ability recognize High frequency currents on Charts Independently		P4						Demo	2	OSPE
94	Show respect among teacher and class fellows				A	Role Play								
TOPIC: HEAT														
95	Week-12	Heat	Define Heat	C1			Interactive Lecture/SGD	2	MCQ's	5				
96		Transmission	Explain Scales of temp and its conversion to other scales	C2										
97			Explain specific heat	C2										
98			Compare the modes of transmission of heat	C2										
99		Practical	Demonstrate ability recognize transmission of heat on Charts Independently		P4						Demo	2	OSPE	5
100			Show respect among teacher and class fellows			A					Role Play			

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assesment	No of Items
				C	P	A				
101	Week-13	Electromagnetic spectrum	Define Electromagnetic spectrum	C2			Interactive Lecture/SGD	2	MCQ's	5
102		Laws	Explain the Relationship between frequency and wave length	C3						
103			Differentiate Laws of reflection, refraction and absorptions	C4						
104			Define Total Internal Reflection	C1						
105			Explain the mechanism of Total Internal Reflection	C2						
106			Mirror	Compare Cosine law and inverse square law	C4					
107		Differentiate between concave and convex mirror		C4						
108		Lenses and prisms	Differentiate between Lenses and prisms	C4						
109		Practical	Demonstrate ability differentiate between concave and convex mirror Independently		P4		Demo	2	OSPE	5
110			Demonstrate ability differentiate between lenses and prisms Independently		P4					
111			Show respect among teacher and class fellows			A	Role Play			
112	Week-14	long, medium, short, micro waves	Explain Radio wave	C2			Interactive Lecture/SGD	2	2	5
113		Rays	Describe Infrared rays	C2						
114			Explain Visible rays	C2						
115			Explain Ultra violet rays	C2						
116			Describe X-rays	C2						
117		alpha beta and gamma	Explain Nuclear waves	C2						
118		Practical	Demonstrate ability recognize rays/ waves on Charts Independently		P4		Demo	2	OSPE	5
119			Show respect among teacher and class fellows			A	Role Play			

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/Hours	Assesment	No of Items
				C	P	A				
TOPIC: SAFETY IN BIOMEDICAL INSTRUMENTS										
120	Week-15	Wiring	Define House Wiring	C2			Interactive Lecture/SGD	2	MCQ's	5
121			Explain Electrical outlets, hot, neutral and ground connections	C3						
122		shock	Define Electric shock and Earth shock	C2						
123			Explain Techniques to reduce the effect of electric shock and precaution against earth shocks							
124			Compare the Functions Each Horns							
125		Practical	Demonstrate ability recognize Electric shock and Earth shock on Charts Independently		P4		Demo	2	OSPE	5
126			Show respect among teacher and class fellows			A	Role Play			
TOPIC: RADIATION PROTECTION										
127	Week-16	Radiation	Define Radiation Protection				Interactive Lecture/SGD	2	MCQ's	5
128			Explain Quantities and associated units of radiations							
129			Compare the Effect of ionizing and non-ionizing radiation's							
130		Hazard	Differentiate Internal and external hazards							
131			Discover Main principle to control external hazard							
132			Compare, the Distance and shielding for radiation							
133		Practical	Demonstrate ability recognize Internal and external hazards on Charts Independently		P4		Demo	2	OSPE	5
134	Show respect among teacher and class fellows				A	Role Play				

Recommended Text Books

ANATOMY

- Gray's Anatomy by Prof. Susan Standring 39th Ed., Elsevier.
- Clinical Anatomy for Medical Students by Richard S.Snell.
- Clinically Oriented Anatomy by Keith Moore.
- Clinical Anatomy by R.J. Last, Latest Ed.
- Cunningham's Manual of Practical Anatomy by G.J. Romanes, 15th Ed., Vol-I, II and III.
- The Developing Human. Clinically Oriented Embryology by Keith L. Moore, 6th Ed.
- Wheater's Functional Histology by Young and Heath, Latest Ed.
- Medical Histology by Prof. Laiq Hussain.
- Neuroanatomy by Richard S.Snell.

PHYSIOLOGY

- Textbook of Physiology by Guyton and Hall, Latest Ed.
- Review of Medical Physiology by William F. Ganong, Latest Ed.
- Physiology by Berne and Levy, Latest Ed.
- Human Physiology: The Basis of Medicine by Gillian Pocock, Christopher D. Richards
- Physiological Basis of Medical Practice by John B. West and Taylor, 12th Ed.

KINESIOLOGY / BIOMECHANICS

- Practical exercise therapy by Margaret Hollis
- Brunnstrom's Clinical Kinesiology
- Clinical kinesiology and anatomy by Lynn S Lippert
- Joint structure and function: a comprehensive analysis by: Pamela. K. Levangie and Cynthia. C. Norkin.
- Muscle function testing by: Cunningham and Daniel.
- Human movement explain by kim jonas and karenbaker
- The principles of exercise therapy by: M Dena Gardiner, 4th Edition

ENGLISH

- Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
- Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506
- Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.
- Reading. Upper Intermediate. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.
- Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.
- Reading and Study Skills by John Langan
- Study Skills by Richard Yorky.

ISLAMIC STUDIES/ ETHICS

- Hameed ullah Muhammad, "Emergence of Islam", IRI, Islamabad
- Hameed ullah Muhammad, "Muslim Conduct of State"
- Hameed ullah Muhammad, 'Introduction to Islam
- Mulana Muhammad Yousaf Islahi,"
- Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.
- Ahmad Hasan, "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad (1993)
- Mir Waliullah, "Muslim Jurisprudence and the Quranic Law of Crimes" Islamic Book Service (1982)
- H.S. Bhatia, "Studies in Islamic Law, Religion and Society" Deep & Deep Publications New Delhi (1989)
- Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad (2001)

MEDICAL PHYSICS

- Clayton's Electrotherapy and actinotherapy by: PM Scott
- Medical physics for physical therapists by: AD Moore
- Preliminary Electricity for Physiotherapists by B. Savage.
- Basic Electronics by Grob.
- Principles of Bio-instrumentation by Richard A. Normann.
- Hand book of Biomedical Instrumentation by R.S. Khanpur.
- Basic Radiation Protection Technology by Gollnick



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