Dr. D.Y. PATIL COLLEGE OF PHYSIOTHERAPY

Dr. D.Y.PATIL VIDYAPEETH, PUNE

(Deemed to be University)

Re-accredited by NAAC with a CGPA of 3.62 on a four point scale at 'A' Grade.

(An ISO 9001:2008 Certified University)

LESSON PLAN

Subject : BIOMECHANICS
Class : BPT II year III Semester (2018)
Class Incharge : Dr. Amita Aggarwal (PT)
Subject Teacher/s : Dr. Amita Aggarwal PT)
Total Hours prescribed: -144 (Didactic-64, Practical/laboratory-32, SPT- 48)

Sr No.	Topic	No. of hours required		Mode of teaching	Name of the Staff
		Th	Pr		
1	**Section- 1: Mechanics** • Introduction to mechanics including motion, forces, parallel forces system, kinetics, kinematics • Newton's law of motion, concurrent force system- composition forces, muscle action line etc. • Centre of gravity, line of gravity, stability and equilibrium. • Introduction to bio-mechanics and terminology • Axes and planes with movements occurring at each joint in respective plan	**2** 1 1	**1** 1	Lecture,Group discussion, Demonstrations	Dr. Neha Kulkarni
2	**Section-2- Muscle Structure and Function** • Muscle structure: composition, unit, structure, architecture of muscle • Classification of muscles • Functions of muscles and factors affecting its function. • Effect of immobilization, injury and aging on muscle • Group action of muscle	**3** 1 1 1	**2** 1 1	PowerPoint presentation, Question and Answer Sessions, Demonstrations.	Dr. Neha Kulkarni
3	• Basic principles of joint design and a human joint • Joint function • Tissues present in human joint including fibrous tissue, bone cartilage and	1 2 1	 1	PowerPoint presentation, Question and Answer Sessions, Demonstrations	Dr. Neha Kulkarni

	connective tissue.				
	• Classification of joints	1	1	PowerPoint presentation, Question and Answer Sessions, Demonstrations.	
	• Recall anatomy and study the biomechanics in detail of following joints: ➢ <u>Upper limb</u>: 1. Biomechanics of shoulder	**18**	**5**		
	• Introduction	1		PowerPoint presentation, Question and Answer Sessions, Demonstrations	
	• Kinematics	3	1		
	• kinetics	3	1		
	2. Biomechanics of elbow:				
	• Introduction and kinematics	1	1	PowerPoint presentation, Question and Answer Sessions, Demonstrations	
	• kinetics	1			
	3. Biomechanics of wrist:				
	• Introduction and kinematics	1	1		
	• kinetics	1			
	4. Biomechanics of hand:				
	• Introduction	1	1	PowerPoint presentation, Question and Answer Sessions, Demonstrations	
	• Kinematics	3			
	• kinetics	3			
	➢ <u>Lower limb</u>: 1. Biomechanics of hip	**18**	**5**	PowerPoint presentation, Question and Answer Sessions, Demonstrations	Dr. Amita Aggarwal
	• Introduction	1			
	• Kinematics	3	1		
	• kinetics	2	1		
	2. Biomechanics of knee				
	• Introduction	1		PowerPoint presentation, Question and Answer Sessions, Demonstrations	
	• Kinematics	3	1		
	• kinetics	3	1		
	3. Biomechanicsof ankle				
	• Introduction and kinematics	1			
	• kinetics	1	1		
	4. Biomechanics of foot				
	• Introduction	1	-	PowerPoint presentation, Question and Answer Sessions, Demonstrations	
	• Kinematics	1			
	• kinetics	1			
	➢ <u>Vertebral Column</u>: 1. Introduction 2. Biomechanics of Cervical spine:	**11**	**5**		Dr. Amita Aggarwal
	• Introduction	1	1	PowerPoint presentation, Question and Answer Sessions, Demonstrations	
	• Kinematics and kinetics				
	3. Biomechanics of thoracic spine	1			
	4. Biomechanics ofthoracic cage	2	1		
		1		PowerPoint	

	• Introduction • Kinematics and kinetics 5. Biomechanics of lumbar spine: • Introduction • Kinematics and kinetics 6. Biomechanics of sacroiliac joint.: • Introduction • Kinematics and kinetics ➢ Biomechanics of temporomandibular joint • Introduction • Kinematics and kinetics • Kinetics and kinematics of various activities of daily living: ➢ supine to sitting, sitting to standing, squatting, climbing up & down ➢ lifting, pulling, pushing, overhead activities ➢ walking, running and jogging.	1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 4 3 2	presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations PowerPoint presentation, Question and Answer Sessions, Demonstrations	Dr. Amita Aggarwal Dr. Amita Aggarwal
4	• Biomechanical alterations of all joint due to muscle weakness, joint stiffness and its implications	2	1	Lecture+ Assignment	Dr. Amita Aggarwal

Total Didactic Hours –
Theory: 64hours
Practical: 32 hours
SPT: 48 hours
Total scheduled hours – 144 hours