Philadelphia University		**Approval date:**
Faculty: Allied Medical Sciences	PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	**Version: 1**
Department: Physiotherapy		**Credit hour: 1**
Academic year 2022/2023	**Course Syllabus**	**Bachelor**

Course information

Course#	Course title	Pre-requisite	
1120227	**Biomechanics Clinical**	**General Physics for Health Sciences (0216135)**	
Course type		**Class time**	**Room #**
☐ University Requirement ☐ Faculty Requirement ☒ Major Requirement ☐ Elective ☒ Compulsory		**Mon: 11 – 1pm** **Wed: 11 – 1pm**	**531**

Instructor Information

Name	Office No.	Phone No.	Office Hours	E-mail
Dr. J. Madhanagopal	**15409**	**0785302488**	**Sun, Tue: 2 - 3pm** **Mon, Wed: 8 - 9am** **Mon: 1 - 3pm**	**mjagannathan@philadelphia.edu.jo**

Course Delivery Method

Course Delivery Method			
☒ **Physical**	☐ **Online**	☐ **Blended**	
Learning Model			
Precentage	**Synchronous**	**Asynchronous**	**Physical**
			100%

Course Description

This course is designed to impart knowledge to students about biomechanical principles and its analysis in the context of physical therapy. This course covers structure, kinematics, and kinetics of all joints of human body. It also covers biomechanical analysis of normal posture and its abnormalities as well as normal gait and its deviations. The practical aspects of the material included in this course will be covered in (1120227) Biomechanics lab.

Course Learning Outcomes

	Number	Outcomes	Corresponding Program outcomes
	Knowledge		
1	**K1**	Explain the kinetics and kinematics of joints of the human body using the biomechanical principles	**KP1**
2	**K2**	Classify the normal gait and its deviation, optimum posture and abnormal posture by applying biomechanical analysis	**KP1**
	Skills		
1	**S1**	Display the biomechanical analysis of joints on human simulator.	**SP1**
	Competencies		
1	**C1**	Analyze the movements of all joint by applying the basic biomechanical principles of kinetics and kinematics.	**CP1**
2	**C2**	Differentiate between normal posture and abnormal postures, normal gait and pathological gait using observation and spatial and temporal variables of gait.	**CP1**

Learning Resources

Course textbook	**Joint Structure and function: A comprehensive Analysis, Pamela K. Levangie, Cynthia C. Norkin and Micheal D. Lewek ,6th edition; 2019; ISBN-13: 978-0-8036-5878-3**
Supporting References	Basic Biomechanics, Susan J. Hall, 8th edition; 2018: ISBN-9781260085549
Supporting websites	www.ebesco.com
Teaching Environment	**☒Classroom ☒ laboratory ☐Learning platform ☐Other**

Meetings and subjects timetable

Week	Topic	Learning Methods	Learning Material
1 **6 March & 8 March**	**Course syllabus, Vision, Mission, Aim and LO of the Program** **Introduction to Biomechanics and its principles** Kinematics Descriptions of motion Newton's laws	Practical	**Vision, Mission, Aim and LO of the Program** **Text book Chapter 1** **Supporting Ref: Chapter 1& 2**

2 **13 March & 15 March**	**Kinetics** Force systems Lever systems Force components, Pulleys	Practical	**Text book Chapter 1** **Supporting Ref: Chapter: 3**
3 **20 March & 22 March**	**Shoulder complex** Components, Structure Kinematics	Practical	**Text book Chapter 7** **Supporting Ref: Chapter: 7**
4 **27 March & 29 March**	**Shoulder complex** Kinetics	Practical & Problem solving based learning	**Text book Chapter 7** **Supporting Ref: Chapter: 7**
5 **3 April & 5 April**	**Elbow complex** Components, Structure Kinematics Kinetics	Practical & Problem solving based learning	**Text book Chapter 8** **Supporting Ref: Chapter: 7**
6 **10 April & 12 April**	**The Wrist and Hand complex** Components, Structure Kinematics Kinetics	Practical	**Text book Chapter 9** **Supporting Ref: Chapter: 7**
7 **17 April & 19 April**	**Hip Joint** Components, Structure Kinematics	Practical	**Text book Chapter 10** **Supporting Ref: Chapter: 8**
8 **24 April & 26 April** **Holiday: 23 and 24 April**	**Hip Joint** Kinetics	Practical & Case based learning	**Text book Chapter 10** **Supporting Ref: Chapter: 8**
9 **1 May & 3 May** **Holiday: 1 May**	Posture Static and dynamic Kinematics and kinetics Analysis of sitting, lying and standing posture	Practical & Problem solving based learning	**Text book Chapter 13**
10 **8 May & 10 May**	Gait Kinetics and kinematics Stair climbing Abnormal gait	Practical & Problem solving based learning	**Text book Chapter 14**
11 **15 May & 17 May**	**Knee Joint** Components, Structure	Practical	**Text book Chapter 11**

	Kinematics Kinetics		**Supporting Ref: Chapter: 8**
12 22 May & 24 May	**Patellofemoral Joint** Components, Structure Kinematics Kinetics	Practical & Problem solving based learning	**Text book Chapter 11 Supporting Ref: Chapter: 8**
13 29 May & 31 May	**Ankle and foot complex** Components, Structure Kinematics Kinetics	Practical	**Text book Chapter 12 Supporting Ref: Chapter: 8**
14 5 June & 7 June	**Spine** Components, Structure Kinematics Kinetics	Practical	**Text book Chapter 4 Supporting Ref: Chapter: 9**
15 12 June & 14 June	**Revision**	Practical	
16 18 June – 26 June	**Final Exam**		

* includes: Lecture, flipped Class, project- based learning, problem solving based learning, collaborative learning

☐ Online session

Course Contributing to Learner Skill Development

Using Technology
Learnt evidence based assessment tools in this course will develop their critical thinking and problem solving skills
Communication skills
Develops interpersonal skills while interacting with the simulator
Application of concepts learnt
Learnt concepts in this course will facilitate critical thinking, clinical reasoning and decision making skills while assessing the patients/simulator

Assessment Methods and Grade Distribution

Assessment Methods	Grade Weight	Assessment Time (Week No.)	Link to Course Outcomes
Midterm exam	**30%**	**April 16-30**	**K2**

Term Work* 1) Quiz* (10 %) 2) Quiz* (10 %) 3) Quiz* (10 %) 4) Video Taped Assignment* (10 %)	**30%**	**Quiz 1: 27 Marc Quiz 2:17 April Quiz 3: 22 May Assign: 7 May**	**K2, 4 & S4**
Final Exam	**40%**	**16**	**K2, 4, C**
Total	**100%**		

* includes: quiz, in class and out of class assignment, presentations, reports, videotaped assignment, group or individual projects.

Note: Best three marks will be taken for Term work (30%)

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Learning Method*	Assessment Method**
Knowledge			
K1	Explain the kinetics and kinematics of joints of the human body using the biomechanical principles	Lecture	**OSPE & Quiz**
K2	Classify the normal gait and its deviation, optimum posture and abnormal posture using the biomechanical principles	Lecture & Problem solving based learning	**OSPE & Quiz**
Skills			
S1	Display the biomechanical analysis of joints on human simulator	Lecture & Problem solving based learning	**Assignment**
Competencies			
C1	Analyze the movements of all joint by applying the basic biomechanical principles of kinetics and kinematics.	Lecture & Problem solving based learning	**OSPE & Quiz**
C2	Differentiate between normal posture and abnormal postures, normal gait and pathological gait using observation and spatial and temporal variables of gait.	Lecture & Problem solving based learning	**OSPE & Quiz**

* includes: Lecture, flipped Class, project- based learning, problem solving based learning, collaborative learning

** includes: quiz, in class and out of class assignment, presentations, reports, videotaped assignment, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum pass for the course is (50%) and the minimum final mark is (35%).
Missing Exams	• Missing an exam/term work without a valid excuse will result in a zero grade to be assigned to the exam or term work • A Student who misses an exam or scheduled assessment, for a legitimate reason, must submit an official written excuse within a week from the exam or assessment due date. • A student who has an excuse for missing a final exam should submit the excuse to the dean within three days of the missed exam date.
Attendance	The student is not allowed to be absent more than (20%) of the total hours prescribed for the course, which equates to three practical days. If the student misses more than (20%) of the total hours prescribed for the course without a satisfactory excuse accepted by the dean of the faculty, she/he will be prohibited from taking the final exam and the grade in that course is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college, then withdrawal grade will be recorded.
Academic Honesty	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as cheating, plagiarism (academic theft), collusion, intellectual property rights

Program Learning Outcomes to be assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Target Performance level
KP1	Demonstrate profound and contemporary knowledge in basic, clinical, medical, and psychosocial sciences relevant to the practice of physical therapy.	**Biomechanics**	**OSPE, Quiz**	75% of students have a minimum score 6 out of 10
SP1	Develop critical analysis and decision-making skills and ability to integrate basic and clinical knowledge within an evidence-based framework.	**Biomechanics**	**OSPE & Assignment**	75% of students have a minimum score 6 out of 10
CP1	Demonstrate competent entry-level skills and abilities to critically reason in terms of screening, evaluation, re-evaluation, diagnosis, prognosis, and development of a plan of care	**Biomechanics**	**OSPE, Quiz & Assignment**	75% of students have a minimum score 6 out of 10

	for clients and patients seeking physical therapy services.			

Description of Program Learning Outcome Assessment Method

Number	Detailed Description of Assessment
KP1	This intended program learning outcome (IPLO) will be assessed by OSPE exam (MCQ and Essay questions), and Assignment
SP1	This IPLO will be assessed by using OSPE & out of class assignment. The following rubrics will be used to evaluate the student's skills.
CP1	This IPLO will be assessed by using OSPE & Quiz.

Video taped Assignment Question

1. Draw, label and explain the concurrent force system and parallel force system for heel rising movement in standing position on human simulator. Videotape your analysis.

Rubrics

	Criteria	Weak (0-2)	Average (3-5)	Satisfactory (6-8)	Competent (9-10)	Score
1	**Identify the main issue/ problem**	Unable to identify issue/problem in complex situations. Uncertain and unable to assess adequately.	Able to identify an issue/problem in a complex situation but less able to assess adequately.	Able to identify a problem with clarity but moderately able to assess and justify the situation.	Able to identify issue/ problem in a complex situation and able to assess and justify the situation.	___ x 2
2	**Analysis of the issue/problem**	Unable to analyze issue/problem in complex situations and uncertain and unable to assess adequately.	Able to analyze issue/ problem in a complex situation but less able to assess adequately.	Able to analyze issue/problem with clarity but moderately able to assess and justify the situation.	Able to analyze issue/problem in a complex situation and able to assess and justify the situation.	___ x 2
3	**Information management**	Poorly updated the information and lack of correlation	Minimum updated information and needs improvement	Adequate updated information lack of correlation	High correlation of information with current	___ x 2

					trends and advances	
4	**Relevance**	No relevance	Sufficient relevance	Good relevance	Excellent relevance	___ x 1

Guidelines for Video taped Assignment

1. Perform the analysis on human simulator and video tape it. Explain it.
2. Conduct your analysis carefully, with more focus on the criteria of the rubrics provided in the course syllabus.
3. Uploading video in unsupported format/wrong file will result in zero grade. Please check before uploading it.
4. On or before May 7, 2023, submit your assignment via MOODLE.
5. Penalty for late submission: 15% of your marks per day.

Note: Assignment should be submitted through Moodle only. Other forms of submission will not be accepted for grading. It is your responsibility to find a human simulator and sort out any problem arises during assignment submission through Moodle. Suggestion: Please avoid last minute submission.