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| **Approval date:** |  | **Philadelphia University** |
| **Version: 1** | **Faculty: Allied Medical Sciences** |
| **Credit hours: 2** | **Department: Physiotherapy** |
| **Bachelor** | **Course Syllabus** | **Academic year 2022/2023** |

**Course information**

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| **Pre-requisite** | | **Course title** | **Course#** |
| **General Physics for Health Sciences (0216135)** | | **Biomechanics** | **1120226** |
| **Room #** | **Class time** | **Course type** | |
| **421** | **Mon: 9.45 – 10.45 am**  **Wed: 9.45 – 10.45 am** | University Requirement  Faculty Requirement  Major Requirement  Elective  Compulsory | |

**Instructor Information**

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

**Course Delivery Method**

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

**Course Description**

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| 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**

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

**Learning Resources**

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| --- | --- |
| 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 | Course textbook |
| Basic Biomechanics, Susan J. Hall, 8th edition; 2018: ISBN- 9781260085549 | Supporting References |
| [www.ebesco.com](http://www.ebesco.com) | Supporting websites |
| **Classroom**  **laboratory Learning platform Other** | Teaching Environment |

**Meetings and subjects timetable**

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| --- | --- | --- | --- |
| **Learning Material** | **Learning Methods** | **Topic** | **Week** |
| **Vision, Mission, Aim and LO of the Program**  **Text book Chapter 1**  **Supporting Ref: Chapter 1& 2** | Lecture | **Course syllabus, Vision, Mission, Aim and LO of the Program**  **Introduction to Biomechanics and its principles**  Kinematics  Descriptions of motion  Newton’s laws | **1**  **6 March & 8 March** |
| **Text book Chapter 1**  **Supporting Ref: Chapter: 3** | Lecture | **Kinetics**  Force systems  Lever systems  Force components, Pulleys | **2**  **13 March & 15 March** |
| **Text book Chapter 7**  **Supporting Ref: Chapter: 7** | Lecture | **Shoulder complex**  Components, Structure  Kinematics | **3**  **20 March & 22 March** |
| **Text book Chapter 7**  **Supporting Ref: Chapter: 7** | Lecture & Problem solving based learning | **Shoulder complex**  Kinetics | **4**  **27 March & 29 March** |
| **Text book Chapter 8**  **Supporting Ref: Chapter: 7** | Lecture &  Problem solving based learning | **Elbow complex**  Components, Structure  Kinematics  Kinetics | **5**  **3 April & 5 April** |
| **Text book Chapter 9**  **Supporting Ref: Chapter: 7** | Lecture | **The Wrist and Hand complex**  Components, Structure  Kinematics  Kinetics | **6**  **10 April & 12 April** |
| **Text book Chapter 10**  **Supporting Ref: Chapter: 8** | Lecture | **Hip Joint**  Components, Structure  Kinematics | **7**  **17 April & 19 April** |
| **Text book Chapter 10**  **Supporting Ref: Chapter: 8** | Lecture&  Case based learning | **Hip Joint**  Kinetics | **8**  **24 April & 26 April**  **Holiday: 23 and 24 April** |
| **Text book Chapter 13** | Lecture &  Problem solving based learning | Posture  Static and dynamic  Kinematics and kinetics  Analysis of sitting, lying and standing posture | **9**  **1 May & 3 May**  **Holiday: 1 May** |
| **Text book Chapter 14** | Lecture &  Problem solving based learning | Gait  Kinetics and kinematics  Stair climbing  Abnormal gait | **10**  **8 May & 10 May** |
| **Text book Chapter 11**  **Supporting Ref: Chapter: 8** | Lecture | **Knee Joint**  Components, Structure  Kinematics  Kinetics | **11**  **15 May & 17 May** |
| **Text book Chapter 11**  **Supporting Ref: Chapter: 8** | Lecture &  Problem solving based learning | **Patellofemoral Joint**  Components, Structure  Kinematics  Kinetics | **12**  **22 May & 24 May** |
| **Text book Chapter 12**  **Supporting Ref: Chapter: 8** | Lecture | **Ankle and foot complex**  Components, Structure  Kinematics  Kinetics | **13**  **29 May & 31 May** |
| **Text book Chapter 4**  **Supporting Ref: Chapter: 9** | Lecture | **Spine**  Components, Structure  Kinematics  Kinetics | **14**  **5 June & 7 June** |
|  | Lecture | **Revision** | **15**  **12 June & 14 June** |
|  |  | **Final Exam** | **16**  **18 June – 26 June** |

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

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Online session

**Course Contributing to Learner Skill Development**

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| 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**

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| --- | --- | --- | --- |
| **Link to Course Outcomes** | **Assessment Time**  **(Week No.)** | **Grade Weight** | **Assessment Methods** |
| **K2** | **April 16-30** | **30%** | **Midterm exam** |
| **K2, 4 & S4** | **Quiz 1: 27 Marc**  **Quiz 2:17 April Quiz 3: 22 May**  **Assign: 7 May** | **30%** | **Term Work\***  **1) Quiz\* (10 %)**  **2) Quiz\* (10 %)**  **3) Quiz\* (10 %)**  **4) Assignment\* (10 %)** |
| **K2, 4, C** | **16** | **40%** | **Final Exam** |
|  |  | **100%** | **Total** |

\* 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**

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

\* 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**

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| --- | --- |
| **Policy Requirements** | **Policy** |
| The minimum pass for the course is (50%) and the minimum final mark is (35%). | **Passing Grade** |
| * Missing an exam/term work without a valid excuse will result in a zero grade to be assigned to the exam or term work even late submission. * 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. | **Missing Exams** |
| The student is not allowed to be absent more than (20%) of the total hours prescribed for the course, which equates to 6 lecture days. If the student misses more than (20%) of the total hours prescribed for the course without a satisfactory or compulsive excuse accepted by the dean of the faculty, he is prohibited from taking the final exam and his result in that subject is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college that is considered. The article is introduced, it is considered withdrawn from that article, and the provisions of withdrawal shall apply to it. | **Attendance** |
| 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 | **Academic Honesty** |

**Program Learning Outcomes to be assessed in this Course**

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| --- | --- | --- | --- | --- |
| **Target Performance level** | **Assessment Method** | **Course Title** | **Learning Outcome** | **Number** |
| 75% of students have a minimum score 6 out of 10 | **Theory Exam,**  **Quiz** | **Biomechanics** | Demonstrate profound and contemporary knowledge in basic, clinical, medical, and psychosocial sciences relevant to the practice of physical therapy. | **KP1** |
| 75% of students have a minimum score 6 out of 10 | **Assignment** | **Biomechanics** | Develop critical analysis and decision-making skills and ability to integrate basic and clinical knowledge within an evidence-based framework. | **SP1** |
| 75% of students have a minimum score 6 out of 10 | **Exam, Quiz,** | **Biomechanics** | 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 for clients and patients seeking physical therapy services. | **CP1** |

**Description of Program Learning Outcome Assessment Method**

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

**Assignment Question**

**1. Draw, label and describe the heel rising movement in standing position using concurrent force system and parallel force system.**

**Rubrics**

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| --- | --- | --- | --- | --- | --- | --- |
|  | **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 trends and advances | \_\_\_ x 2 |
| 4 | **Relevance and List of references** | No relevance and fails to use the references in a correct way | Sufficient relevance, partially fulfill the required number of references | Good relevance, fulfill and appropriate use of references | Excellent relevance and exceed the required number of references | \_\_\_ x 1 |

**Guidelines for Assignment**

1. Use Times New Roman. The font size for headings is 14 and the font size for text is 12. Use 1.5 lines of spacing between sentences in the text.
2. Limit your assignment to a word count of less than 500 words (2 pages).
3. Write your assignment carefully, with more focus on the criteria of the rubrics provided in the course syllabus.
4. Use this plagiarism checker website, [https://www.check-plagiarism.com/,](https://www.check-plagiarism.com/) or Turnitin to check for plagiarism in your assignment. It’s free. Take a screen shot of your plagiarism report and submit it along with your assignment. Plagiarism should be less than 20%.
5. Assignments with more than 20% plagiarism will not be accepted and copy from your peer group/uploading assignment in unsupported format will also result in zero grade.
6. On or before May 7, 2023, submit your assignment via MOODLE.
7. 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 sort out any problem arises during assignment submission through Moodle. Suggestion: Please avoid last minute submission.**