



Department of Kinesiology
KIN 3027L Biomechanics Laboratory
1 unit

Fall 2019 (Quad II)

Meeting days & times: Section 1: T 2:30PM-4:25PM Section 2: T 6:00PM-7:55PM	Instructor: Arnel Aguinaldo, PhD, ATC
Meeting location: KIN Lab (Rohr Science 195)	Phone: 619-849-3007
Prerequisites: KIN 325/327	E-mail: arnelaguinaldo@pointloma.edu
TA: Andrew Plows (aplows2742@pointloma.edu)	Office hours: R 2:00-4:00PM or by appointment

PLNU Mission
To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

COURSE DESCRIPTION

This lab complements the Applied Biomechanics course (KIN 327), which is designed to provide students with a mix of theoretical concepts and applied problem-solving in various biomechanical applications in human movement. Through the core math, physics, kinesiology, and anatomy classes students have taken to this point, you have been provided a breadth of information that will serve you in learning and applying the basic concepts of kinematics and kinetics of whole body and joint movement.

COURSE LEARNING OUTCOMES

At the end of this lab-based course, students will be able to:

1. Use the vocabulary, principles and relationships unique to the disciplines of applied biomechanics.
2. Apply the basic principles of kinematics in quantifying and describing joint movement.
3. Articulate the concepts of linear and angular kinetics and their effects on human movement.
4. Describe the various technology and methods employed to quantitatively measure joint kinematics and kinetics
5. Describe the processes of kinematic, kinetic, and muscle activation data collection using motion analysis, force platforms, and electromyography.
6. Analyze joint movement in clinical-decision making and human performance assessment using biomechanical techniques
7. Critically evaluate biomechanical research.

REQUIRED TEXTS AND RECOMMENDED RESOURCES

- McLester, J., St. Pierre, P. (2019). *Applied Biomechanics. Concepts and Connections*. (2nd Edition). Burlington, MA: Jones & Bartlett Learning.
- Lab handouts will be provided throughout the quad via Canvas.

ASSESSMENT AND GRADING

- **Lab Assignments:** There will be seven lab assignments worth 20 points each to be scheduled throughout the quad. Each lab will require students to collect and analyze data in the biomechanics lab and write up an abstract. All lab write-ups must be submitted via Canvas on the respective due dates. (140 pts total)
- **Quizzes:** There will be six quizzes that act as “pre-lab” assessments to prepare students for labs 2-7. Each quiz is worth 10 points each and will consist of multiple choice and T/F questions (60 pts total)
- **Article Reviews:** Each student will write two article reviews worth 50 points each that utilize biomechanical tools discussed and used in this course. Each article review will be at least 2 pages (double spaced, 12-point font) and consist of a summary of the introduction, methods, results, and discussion sections of the article. (100 points total)

ASSESSMENT	POINTS	COURSE OBJECTIVES
Lab Assignments	140	1,2,3,4,5,6
Quizzes	60	1,23,5,6
Article Reviews	100	1-7
-----	-----	
Total	300	

POINTS	GRADE	POINTS	GRADE
278-300	A	224-232	C
269-277	A-	215-223	C-
260-268	B+	206-214	D+
251-259	B	197-205	D
242-250	B-	188-196	D-
233-241	C+	0-187	F

PLNU ATTENDANCE AND PARTICIPATION

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member has the option of filing a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice. If the date of de-enrollment is past the last date to withdraw from a class, the student will be assigned a grade of W or WF consistent with university policy in the grading section of the catalog. Although attendance will be rarely taken, there is a strong negative correlation between number of absences and grade percentage in this class.

INCOMPLETES AND LATE ASSIGNMENTS

- All assignments are to be submitted/turned in via Canvas by the beginning of the class session when they are due.
- Late work (turned in any time after the due date and time) may be turned in until the last day of class, for a maximum of 50% credit (this is still a failing grade but is better than zero points).

PLNU ACADEMIC DISHONESTY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. As stated in the university catalog, “Academic dishonesty is the act of presenting information, ideas, and/or concepts as one’s own when in reality they are the results of another person’s creativity and effort. Such acts include plagiarism, copying of class assignments, and copying or other fraudulent behavior on examinations. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for a) that particular assignment or examination, and/or b) the course.” See [Academic Policies](#) in the undergrad student catalog.

PLNU ACADEMIC ACCOMMODATIONS

While all students are expected to meet the minimum academic standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the [Disability Resource Center](#) (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center will contact the student’s instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. The DRC’s policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student’s specific learning needs. The DRC will thereafter email the student’s AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course. See [Academic Policies](#) in the undergrad student catalog.

FERPA POLICY

In compliance with federal law, neither PLNU student ID nor social security number should be used in publically posted grades or returned sets of assignments without student written permission. This class will meet the federal requirements by (each faculty member choose one strategy to use: distributing all grades and papers individually; requesting and filing written student permission; or assigning each student a unique class ID number not identifiable on the alphabetic roster.). Also in compliance with FERPA, you will be the only person given information about your progress in this class unless you have designated others to receive it in the “Information Release” section of the student portal. See [Policy Statements](#) in the undergrad student catalog.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

USE OF TECHNOLOGY

Point Loma Nazarene University encourages the use of technology for learning, communication, and collaboration. It is the responsibility of the student to confirm access to the essential applications needed for the class such as Excel as well as standard online research tools.

COURSE SCHEDULE AND ASSIGNMENTS

Updated 10/15/2019 (schedule is subject to change depending on students and instructor's needs)

WEEK	TOPIC	MATERIALS	DUE
1	Kinematic Description	Text: pp. 60-83 Lab 1 Handout	
2	Osteokinematics	Text: pp. 130-134, 145-153 Lab 2 Handouts	Quiz 1 Lab 1
3	Gait Analysis with Electromyography	Text: pp. 109, 242 Lab 3 Handouts	Quiz 2 Lab 2
4	Running	Text: pp. 45, 229 Lab 4 Handouts	Quiz 3 Lab 3
5	Jumping and Landing	Text: pp. 336, 365-366 Lab 5 Handouts	Quiz 4 Article Review 1 Lab 4
6	Throwing	Text: pp. 49-50, 62-65, 172-173 Lab 6 Handouts	Quiz 5 Lab 5
7	Stability and Balance	Text: pp. 227-235 Lab 7 Handouts	Quiz 6 Lab 6
8	No Lab (Finals Week)		Lab 7 Article Review 2

HAVE A BLESSED CHRISTMAS & A HAPPY NEW YEAR!