Course Syllabus

Jump to Today



Department of Kinesiology

KIN 3027 - Applied Biomechanics

Number of Units: 2

Spring 2023

Meeting days: Thursday	Instructor: <u>Arnel Aguinaldo, PhD, J</u> (https://canvas.pointloma.edu/courses
Meeting times: 10:00 AM - 11:45 AM	Phone: 619-849-3007
Meeting location: KIN 2	Email: <u>aaguinal@pointloma.edu (n</u>
Final Exam: <u>Narrative Review</u> (<u>https://canvas.pointloma.edu/courses/65641/assignments/880658)</u> (due 5/4/2023)	Office Hours
TA: Jason Hashimoto Email: jhashimo0022@pointloma.edu (mailto:jhashimo0022@pointloma.edu)	Office Hours

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 is an expression of

faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

COURSE DESCRIPTION

This class is designed to provide students with a mix of theoretical concepts and applied problemsolving 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 the basic concepts of kinematics and kinetics of whole body and joint movement.

COURSE LEARNING OUTCOMES

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

- 1. **Explain** the vocabulary, principles, and relationships unique to the disciplines of applied biomechanics.
- 2. Articulate the basic principles of kinematics in quantifying and describing joint movement.
- 3. Identify the concepts of linear and angular kinetics and their effects on human movement.
- 4. **Describe** various technology and methods employed to quantitatively measure joint kinematics and kinetics
- 5. **Apply** biomechanical techniques to evaluate joint movement in clinical-decision making and analyzing human performance
- 6. Interpret movement patterns in basic clinical applications using qualitative biomechanical analyses.
- 7. Compare the kinematic and kinetic patterns between conditions of walking and jumping.

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

McLester, J., St. Pierre, P. (2019). *Applied Biomechanics. Concepts and Connections.* (2nd Edition). Burlington, MA: Jones & Bartlett Learning. <u>Available on Amazon here</u>



(https://www.amazon.com/dp/1284170047/ref=cm_sw_em_r_mt_dp_U_OdwIDbY93H9SJ%20)

NOTE: Students are responsible to have the required textbooks prior to the first day of class. Students are also encouraged to begin reading the books in preparation for the class as soon as possible.

This course also utilizes the following online tools (free of charge for students) to facilitate student engagement and enhance your learning experience:

- ZOOM Zoom video conferencing will be used for selected meetings and virtual office hours
- ______DICYDOSIt _(<u>https://knowledge.playposit.com/article/260-the-student-experience-without-an-</u>

Ims) - PlayPosit (https://knowledge.playposit.com/article/260-the-student-experience-without-an-Ims) will be used for in-video quizzes and interactive video lectures/tutorials

COURSE CREDIT HOUR INFORMATION

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 2 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirement can be provided upon request. (Based on 37.5 hours of student engagement per credit hour.)

Category	Time Expectation in Hours
Online Participation in Discussions, Groups,	15
etc.	IJ
Reading Assignments	10
Written Assignments	15
Other Assignments & Learning Activities	15
Quizzes, Surveys	20
Total Hours	75

Distribution of Student Learning Hours

ASSESSMENT AND GRADING

- Assignments: There will be six assignments worth 10 points each to be scheduled throughout the semester. These assignments will vary in difficulty depending on the module covered that week. Problems from each assignment will be discussed in class or in office hours.
- **Mid-Term Exam:** A mid-term exam will be administered via Canvas on the date noted below in the course schedule. It will consist of multiple choice and T/F questions, covering the material from the first unit (5 modules).
- Lab Report: Students will have the opportunity to perform a basic gait analysis using kinematic and kinetic data previously collected in the biomechanics lab. A lab guide on how to write this report will be posted on Canvas in Module 10.
- **Narrative Review:** As part of an effort to gain experience in biomechanics scientific research, each student will be required to complete a literature review on a topic within the fields of sports biomechanics, physical therapy, or gait analysis. This project involves searching and reviewing six biomechanical research articles from peer-reviewed journals relevant to their selected topic and writing up a three-page abstract summarizing their analysis of the topic.

- In-Video Quizzes: The *PlayPosit* web-based tool will be used for in-video quizzes (bulbs), which are interactive videos each embedded with 3-5 questions relevant to the content.
- **Participation:** In addition to the live class sessions and the syllabus quiz, participation will be measured using module discussions that require you to post a response to the prompt and replies to at least two of your peers. Your posts should be substantive in nature and foster a healthy dialogue between peers about the material. Your initial post should be at least 250 words while replies to peers should be at least 100 words. In some cases, video responses will be welcomed.

ASSESSMENT	%	COURSE OBJECTIVES
Mid-Term Exam	20	1,2,3
Assignments	20	1,2,3,5,6
Lab Report	10	1-7
Narrative Review	30	1-6
In-Video Quizzes (bulbs)	13	1-7
Participation	7	1,2,3,4,6,7
Total	100	

Grading Schema

GRADE	MAX	MIN
A	100 %	to 94.0%
A-	< 94.0 %	to 90.0%
B+	< 90.0 %	to 87.0%
В	< 87.0 %	to 84.0%
В-	< 84.0 %	to 80.0%
C+	< 80.0 %	to 77.0%
С	< 77.0 %	to 74.0%
C-	< 74.0 %	to 70.0%

D+	< 70.0 %	to 67.0%
D	< 67.0 %	to 64.0%
D-	< 64.0 %	to 61.0%
F	< 61.0 %	to 0.0%

STATE AUTHORIZATION

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on <u>State Authorization</u> (https://www.pointloma.edu/offices/office-institutional-effectiveness-research/disclosures) to view which states allow online (distance education) outside of California.

INCOMPLETES AND LATE ASSIGNMENTS

All assignments are to be submitted/turned in by the beginning of the class session when they are due including assignments posted in Canvas. Late submissions of assignments will be accepted for 50% credit. Incompletes will only be assigned in extremely unusual circumstances.

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.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. 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. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See <u>Academic Policies (http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278)</u> for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications

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or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu (mailto:DRC@pointloma.edu) or 619-849-2486). 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.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all synchronous class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (virtual or face-to-face), the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. In some courses, a portion of the credit hour content will be delivered asynchronously and attendance will be determined by submitting the assignments by the posted due dates. See <u>Academic Policies</u>

(<u>https://catalog.pointloma.edu/content.php?catoid=46&navoid=2650#Class_Attendance)</u> in the Undergraduate Academic Catalog. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

Asynchronous Attendance/Participation Definition

A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

SPIRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the <u>Office of Spiritual Development (https://www.pointloma.edu/offices/spiritual-development)</u>

DIVERSITY AND INCLUSION STATEMENT

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: disability, age, socioeconomic status, ethnicity, race, nationality, religion, gender, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups. To help accomplish this:

- If you have a name and/or set of pronouns that differ from those that appear in your official PLNU records, please let me know!
- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you.
- I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it.

USE OF TECHNOLOGY

In order to be successful in the online environment, you'll need to meet the minimum technology and system requirements; please refer to the <u>Technology and System Requirements</u> (<u>https://help.pointloma.edu/TDClient/1808/Portal/KB/ArticleDet?ID=108349</u>) information.

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

ASSIGNMENTS AT-A-GLANCE

The table below lists our assignments and their due dates. Click on any assignment to review it.

Course Summary:

Date	Details	Due
Mon Jan 9, 2023	Module 1 Overview	to do: 11:59pm

Date	Details	Due
	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138220&include_contexts=course_65641)	10am to 11:30am
	Live Kick-Off Session (Module 1) (https://canvas.pointloma.edu/courses/65641/assignments/880	due by 11:59pm <u>0628)</u>
	Meet & Greet <u>Meet & Greet</u> <u>(https://canvas.pointloma.edu/courses/65641/assignments/880) </u>	due by 11:59pm 0 <u>632)</u>
Thu Jan 12, 2023	Module 1 Discussion Initial <u>Post Due</u> (https://canvas.pointloma.edu/calendar? event_id=138228&include_contexts=course_65641)	11:59pm
	Syllabus Quiz (https://canvas.pointloma.edu/courses/65641/assignments/880	due by 11:59pm <u>0612)</u>
	In-Video Quiz: Biomechanics Overview (https://canvas.pointloma.edu/courses/65641/assignments/880	due by 11:59pm)638)
Sun Jan 15, 2023	In-Video Quiz: System and Motion Description I (https://canvas.pointloma.edu/courses/65641/assignments/880	due by 11:59pm <u>0650)</u>
	In-Video Quiz: System and Motion Description II (https://canvas.pointloma.edu/courses/65641/assignments/880	due by 11:59pm 0651)
	Module 1 Discussion (<u>https://canvas.pointloma.edu/courses/65641/assignments/880</u>)	due by 11:59pm 0629)
Mon Jan 16, 2023	Module 2 Overview	to do: 11:59pm

Date	Details	Due
	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138226&include_contexts=course_65641)	10am to 11:30am
Thu Jan 19, 2023	Live Class Session (Module 2) (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 380618)
	Module 2 Discussion Initial <u>Post Due</u> (https://canvas.pointloma.edu/calendar? event_id=138231&include_contexts=course_65641)	11:59pm
	In-Video Quiz: Functional Movement Screen (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 380639)
Sun Jan 22, 2023	In-Video Quiz: Qualitative Analysis (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 380649)
	Module 2 Discussion (<u>https://canvas.pointloma.edu/courses/65641/assignments/8</u>)	due by 11:59pm 380630)
Mon Jan 23, 2023	Module 3 Overview	to do: 11:59pm
	Live Class Session (<u>https://canvas.pointloma.edu/calendar?</u> event_id=138225&include_contexts=course_65641)	10am to 11:30am
Thu Jan 26, 2023	In-Video Quiz: Linear Motion I (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 880644)
	Live Class Session (Module 3) (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 880622)
Sup lap 20, 2022	Same Assignment 1 (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 380614)
Sun Jan 29, 2023	In-Video Quiz: Linear Motion II (https://canvas.pointloma.edu/courses/65641/assignments/8	due by 11:59pm 880645)

Date	Details	Due
Mon Jan 30, 2023	Module 4 Overview	to do: 11:59pm
	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138229&include_contexts=course_65641)	10am to 11:30am
Thu Feb 2, 2023	In-Video Quiz: Torque and Center of Gravity (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm 80652)
	Live Class Session (Module 4) (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>80627)</u>
		due by 11:59pm 80615)
Sun Feb 5, 2023	In-Video Quiz: Biceps Curl Kinetics (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>80637)</u>
Mon Feb 6, 2023	Module 5 Overview	to do: 11:59pm
	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138222&include_contexts=course_65641)	10am to 11:30am
Thu Feb 9, 2023	In-Video Quiz: Angular Motion I I (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>80634)</u>
	Live Class Session (Module 5) (https://canvas.pointloma.edu/courses/65641/assignments/88 (https://canvas.pointloma.edu/courses/65641/assign	due by 11:59pm <u>80621)</u>
Sun Feb 12, 2023	In-Video Quiz: Bat Swing Analysis (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm 80636)

Date	Details	Due
	No Class Session (https://canvas.pointloma.edu/calendar? event_id=138221&include_contexts=course_65641)	10am to 11:30am
Thu Feb 16, 2023	Module 5 Discussion Initial Post (https://canvas.pointloma.edu/calendar? event_id=138227&include_contexts=course_65641)	11:59pm
	<u> </u>	due by 11:59pm :/ <u>880616)</u>
Sun Feb 19, 2023	In-Video Quiz: Angular Motion II (https://canvas.pointloma.edu/courses/65641/assignments)	due by 11:59pm <u>\$/880635)</u>
	Module 5 Discussion (<u>https://canvas.pointloma.edu/courses/65641/assignments</u>)	due by 11:59pm : <u>/880619)</u>
Thu Feb 23, 2023	Live Review Session (<u>https://canvas.pointloma.edu/calendar?</u> event_id=138223&include_contexts=course_65641)	10am to 11:30am
	Live Review Session (<u>https://canvas.pointloma.edu/courses/65641/assignments</u>)	due by 11:59pm / <u>880620)</u>
Thu Mar 2, 2023	<u> </u>	due by 11:59pm ;/880610)
Thu Mar 9, 2023	Spring Break (https://canvas.pointloma.edu/calendar? event_id=138433&include_contexts=course_65641)	12am
Mon Mar 13, 2023	Module 6 Overview	to do: 11:59pm

Date	Details	Due
	Live Class Session (<u>https://canvas.pointloma.edu/calendar?</u> event_id=138224&include_contexts=course_65641)	10am to 11:30am
Thu Mar 16, 2023	In-Video Quiz: Projectiles I (https://canvas.pointloma.edu/courses/65641/assignments/	due by 11:59pm / <u>880647)</u>
	Live Class Session (Module 6) (https://canvas.pointloma.edu/courses/65641/assignments/	due by 11:59pm / <u>880626)</u>
0 14 40 0000	Assignment 4 (https://canvas.pointloma.edu/courses/65641/assignments/	due by 11:59pm / <u>880613)</u>
Sun Mar 19, 2023	In-Video Quiz: Projectiles II (https://canvas.pointloma.edu/courses/65641/assignments/	due by 11:59pm / <u>880648)</u>
Mon Mar 20, 2023	Module 7 Overview	to do: 11:59pm
	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138216&include_contexts=course_65641)	10am to 11:30am
Thu Mar 23, 2023	In-Video Quiz: Work I (https://canvas.pointloma.edu/courses/65641/assignments/	due by 11:59pm (880653)
	Module 7 Discussion Initial <u>Post Due</u> (https://canvas.pointloma.edu/calendar? event_id=138230&include_contexts=course_65641)	11:59pm
	Assignment 5 (https://canvas.pointloma.edu/courses/65641/assignments/	due by 11:59pm /880611)
Sun Mar 26, 2023	In-Video Quiz: Work II (https://canvas.pointloma.edu/courses/65641/assignments)	due by 11:59pm / <u>880654)</u>
	Live Class Session (Module 7) Discussion (https://canvas.pointloma.edu/courses/65641/assignments/ (https://canvas.pointloma.edu/courses/65641/assignments/)	due by 11:59pm / <u>880631)</u>
Mon Mar 27, 2023	Module 8 Overview	to do: 11:59pm

Date	Details	Due
	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138218&include_contexts=course_65641)	10am to 11:30am
Thu Mar 30, 2023	In-Video Quiz: Gait Analysis I (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30640)</u>
	Live Class Session (Module 8) (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30625)</u>
Sun Apr 2, 2023	In-Video Quiz: Gait Analysis II (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30641)</u>
Thu Apr 6, 2023	Easter Recess (https://canvas.pointloma.edu/calendar? event_id=138219&include_contexts=course_65641)	12am
Mon Apr 10, 2023	Module 9 Overview	to do: 11:59pm
Thu Apr 13, 2023	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138217&include_contexts=course_65641)	10am to 11:30am
	In-Video Quiz: Jumping Analysis I (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30642)</u>
	➡ Live Class Session (Module 9) (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30624)</u>
	Same Assignment 6 (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30617)</u>
Sun Apr 16, 2023	In-Video Quiz: Jumping Analysis II (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>30643)</u>
Mon Apr 17, 2023	Module 10 Overview	to do: 11:59pm

Date	Details	Due
Thu Apr 20, 2023	Live Class Session (https://canvas.pointloma.edu/calendar? event_id=138232&include_contexts=course_65641)	10am to 11:30am
	Live Class Session (Module <u>10)</u> (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>0623)</u>
Sun Apr 23, 2023	In-Video Quiz: Movement Lab Data Interpretation (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>0646)</u>
Thu Apr 27, 2023	Course Evaluation (Extra Credit) (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>0633)</u>
	Movement Analysis Lab Due (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm <u>0657)</u>
Thu May 4, 2023	Narrative Review (https://canvas.pointloma.edu/courses/65641/assignments/88	due by 11:59pm 0658)
	Jeopardy 1 (Extra Credit) (https://canvas.pointloma.edu/courses/65641/assignments/88	<u>0655)</u>