

KIN 6046

Clinical Exercise Physiology & Metabolism

Kinesiology Department

KIN 6046 Clinical
Exercise Physiology &
Metabolism

3 units

Fall 2023

Meeting days: Mondays

Instructor title and name: Dr. Kristen Snyman

Meeting times: 5:00-8:30 pm

Meeting location: Balboa 136

Email: ksnyman@pointloma.edu

Final Exam: during week 8 in class

Office location and hours: 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 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 course provides an advanced understanding of the clinical effects and physiologic adaptations of the human body to exercise interventions. The effects of exercise on the organ systems of the body will be explored through lecture and laboratory experiences with an emphasis toward combating obesity, diabetes, and metabolic syndrome. The clinical application of current research will occur in lab settings.

COURSE LEARNING OUTCOMES

1. Demonstrate a working knowledge of:

- - the **3 ATP-producing systems** of the human cell.
 - **substrate utilization** during rest and exercise.
 - **maximal oxygen consumption (VO₂ max)** including physiological limiters, practical uses, and performance applications.
 - the **lactate threshold** including physiological determinants, practical uses, and performance applications.
 - **maximal steady state of exercise** including physiological determinants, practical uses, and performance applications.
 - **basic VO₂ kinetics**.
 - the physiological factors involved in **energy balance**, weight loss, weight maintenance, and weight gain
 - the underlying pathophysiology, onset, and **effects of exercise on preventing and treating the following diseases:** Cardiovascular disease, Type II Diabetes, Obesity
- 2. Analyze and interpret data outputs from **standard exercise tests** including Wingate, 3-minute all-out test, metabolic measurement testing during rest and exercise, and maximal oxygen uptake testing.
- 3. Apply **physiology knowledge to exercise test results**.
- 4. Read and **critically analyze peer-reviewed journal articles** in the field of exercise physiology.

REQUIRED READINGS

Peer-reviewed research articles and book chapters posted on Canvas

ASSESSMENT AND GRADING

Item	Points per assignment	Total points	Percent of total points
1. Take Home Exams	3 @ 100 points each	300	~45%
2. Partner Presentation	1 @ 50 points	50	~7%
3. Article Presentation	1 @ 25 points	50	~7%
4. Lab Write ups	2 @ 50 points each	100	~15%

5. Quizzes	7 @ 10 points	70	~10%
6. Synthesis Table	1 @ 100 points	100	~15%

Grade scale (percentages):	
A=93-100	C=73-76
A-=92-90	C-=70-72
B+=87-89	D+=67-69
B=83-86	D=63-66
B-=80-82	D-=60-62
C+=77-79	F=0-59

Week	Location	Topic	Assignment
1	5:00-8:30 pm In Person Balboa room 136	Lecture: Metabolism, muscle contraction, substrate utilization Lab: Wingate test, 3-minute all-out (critical power) test	Quiz 1 (due before class) Lab 1 (due Sunday 11:59 pm)
2	5:00-8:30 pm In Person Balboa room 136	Lecture: VO ₂ max, Fick Equation Lab: VO ₂ max test	Quiz 2 (due before class)

3	5:00-8:30 pm In Person Balboa room 136	Lecture: Critical Power, Lactate Threshold, VO ₂ kinetics Lab: Exercise domains	Quiz 3 (due before class) Lab 2 covering labs in weeks 2 & 3 (due Sunday 11:59 pm)
4	5:00-8:30 pm synchronous class on Zoom	Cardiovascular disease (CVD)	Quiz 4 (due before class) Take home exam 1 (due Sunday 11:59 pm) Mid-course survey (due Sunday 11:59 pm)
5	Asynchronous (recorded) lecture only	Cardiovascular disease (CVD)	Quiz 5 (due before class) Synthesis table (due Sunday 11:59 pm)
6	5:00-8:30 pm synchronous class on Zoom	Type II Diabetes (T2D)	Quiz 6 (due before class) Take home exam 2 (due Sunday 11:59 pm)
7	5:00-8:30 pm synchronous class on Zoom	Obesity	Quiz 7 (due before class)
8	5:00-8:30 pm synchronous class on Zoom	Presentations	Take home exam 3 (due Sunday 11:59 pm) End-of-course Evaluation

INCOMPLETES AND LATE ASSIGNMENTS

Assignments not turned in by the **day and time** they are due will immediately lose 50% of possible points. *Please be do NOT wait until last minute to submit assignments!* Technology difficulties are not an acceptable excuse for late work.

PLNU SPIRITUAL CARE

Balboa Campus:

PLNU strives to be a place where you grow as whole persons. To this end we provide resources for our graduate students to encounter God and grow in their Christian faith. At the Balboa campus we have an onsite chaplain, Rev. Kevin Portillo who is available during class break times across the week. If you have questions, desire to meet with Rev. Portillo or prayer requests you can contact him directly at KevinPortillo@pointloma.edu.

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 the [Academic Honesty Policy](#) in the Graduate and Professional Studies Catalog for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

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 [Academic Policies](#) in the Graduate and Professional Studies 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.

Face-to-face courses

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 can file a written report which may result in 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. See [Academic Policies](#) in the Graduate and Professional Studies Catalog for additional detail.

SEXUAL MISCONDUCT AND DISCRIMINATION

Point Loma Nazarene University faculty are committed to helping create a safe learning environment for all students. If you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available through the [Title IX Office](#). Please be aware that under Title IX of the Education Amendments of 1972, it is required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at the [Title IX Office | Get Help Now](#)

USE OF TECHNOLOGY

In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements; please refer to the [Technology and System Requirements](#) information. Additionally, students are required to have headphone speakers, microphone, or webcams compatible with their computer available to use. Please note that any course with online proctored exams requires a computer with a camera (tablets are not compatible) to complete exams online.

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