



Department of Kinesiology (MS - Athletic Training)

ATR 6005 - Research Methods and Statistical Techniques for Clinical Decisions in Sports Medicine

Number of Units: 3

Spring 2021

<b>Meeting days:</b> Asynchronous + Synced Meetings	<b>Instructor:</b> <u>Arnel Aguinaldo, PhD, ATC ("Dr. A")</u>
<b>Meeting times:</b> Asynchronous + Synced Meetings	<b>Phone:</b> 619-849-3007
<b>Meeting location:</b> Online	<b>Email:</b> <u><a href="mailto:aaguinal@pointloma.edu">aaguinal@pointloma.edu</a></u>
<b>Final Exam:</b> <u>Take-Home Final Exam</u> (March 7)	<u>Virtual Office Hours</u>

**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 course will explore the variety in research design and statistics commonly used in clinical research, further developing student analytical skills needed to support professional evidence-based practice in athletic training. Students will evaluate the merit and relevance of published research to the practice of athletic training from the perspective of experimental methodology and design. This course also provides an overview of statistics including descriptive and inferential statistics and one-way ANOVA. Students should have a basic understanding of conducting library and Internet information searches prior to taking this course. Students will select a topic of interest related to athletic training, conduct a review of the literature, define a research question, and prepare and present a report to their peers. Students will complete human participants protection training.

**COURSE AIM**

This course will provide you with basic knowledge of literature review, descriptive and inferential statistics, diagnostic test accuracy, and research proposal prior to enrolling in ATR 6010A (Evidence-Based Practice and Concepts in Sports Medicine).

**INSTITUTIONAL LEARNING OUTCOMES (ILO)**

1. **Learning, Informed by our Faith in Christ**

Students will acquire knowledge of human cultures and the physical and natural world while developing skills

and habits of the mind that foster lifelong learning.

2. **Growing, In a Christ-Centered Faith Community**

Students will develop a deeper and more informed understanding of others as they negotiate complex professional, environmental and social contexts.

3. **Serving, In a Context of Christian Faith**

Students will serve locally and/or globally in vocational and social settings.

### PROGRAM LEARNING OUTCOMES (PLO)

The Point Loma Nazarene University MS-AT graduate will be able to:

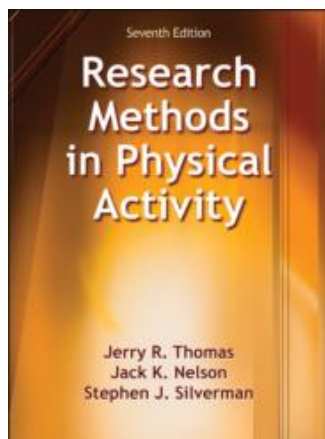
1. Prepare students to demonstrate competency in interpreting evidence-based research and improving clinical standards and practice through clinical question development and research methodology
2. Prepare students to develop expertise in the athletic training domains through an integrative experiential clinical model
3. Equip students with appropriate knowledge and educational foundation required for an entry-level Certified Athletic Trainer (ATC)
4. Prepare students to establish and understand the importance of inter-professional relationships, while collaborating with other health care professionals to become effective communicators
5. Prepare students to demonstrate preparation, knowledge and skill in the delivery of comprehensive health care to a diverse set of patients with musculoskeletal injuries and conditions and illnesses in a distinctly moral and ethical manner, integrating Christian faith with clinical practice.

### COURSE LEARNING OUTCOMES (CLO)



Upon completion of this course, students should be able to:

1. Explain the value and importance of developing research ideas, conducting research and employing the scientific method within the field of athletic training to solve relevant problems.
2. Explain the general principles of research design for experimental and non-experimental research, including literature review, sampling procedures, selection of subjects, ethical treatment of subjects, data collection, and IRB standards.
3. Understand basic measurement constructs such as validity, reliability, scales of measurement, field tests, and laboratory tests
4. Employ statistical analysis for the purpose of exploratory data analysis and hypothesis testing, including t-tests and simple ANOVAs, and estimating effect sizes
5. Identify measures of risk factors of injury such as absolute risk, relative risk, and odds ratio
6. Estimate the accuracy of diagnostic tests using specificity, sensitivity, likelihood ratio, and prediction values
7. Develop and present a research project proposal for a Critically Appraised Topic (CAT)

### REQUIRED RESOURCES



Thomas, J.R., Nelson, J.K., & Silverman, S. (2015). *Research methods in physical activity* (7th ed.). Champaign, IL: Human Kinetics. [Purchase eBook here](#) .

-  - Zoom video conferencing will be used for synced meetings and virtual office hours
-  - PlayPosit will be used for in-video quizzes and interactive video lectures/tutorials

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. All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

## ASSESSMENT AND GRADING

Course Requirements: Assessment of Course Learning Outcomes

### I. **Participation (10%):** Assesses Course Learning Outcomes #1, #2, #4, #6

We have supplemented the course text and lecture materials with current evidence-based medical literature. It is expected that course material will be read beforehand so that informed and lively discussion may be the primary focus of live class meetings and online discussions. After certain readings, you will respond to questions or prompts on the Live Webinar Agenda or Discussion Board on Canvas the Thursday of the module in which the discussion is assigned followed by at least two replies to your peers by Sunday. At other times, you will be asked to summarize the key points of outside readings by outlining the major points of the article prior to class. Additionally, you are expected to participate in the **Meet & Greet** discussion in Week 1 (worth 5 points).

### II. **Syllabus and In-video quizzes (10%):** Assesses Course Learning Outcomes #2-4

The first quiz of the course is a simple **syllabus quiz**. In order to assess your preparation in course modules, you will complete in-video quizzes (PlayPosit "bulbs") to gauge your preparation for discussions. These will also allow the professor to ascertain "sticking points" for students so that class time can be spent in clarifying key concepts.

### III. **Protecting Human Research Participants Certification (2%):** Assesses Course Learning Outcome #2

All investigators engaging in clinical research where human participants are involved must undergo human subjects training. This training covers the ethical issues involving human participants in research. You will need to submit your certificate of completion by week 3, which is worth 10 points. You cannot participate in any of the course's assignments involving data collection and analysis (described in IV-VI below) without this certificate.

### IV. **Assignments (20%):** Assesses Course Learning Outcomes #3, #4, #5, #6

There are several assignments all designed to enhance your understanding and application of research methods and/or statistical concepts. All write ups need to be completed in APA format and submitted via Canvas before class on the due date (see course schedule).

### V. **Proposal presentation (20%):** Assesses Course Learning Outcome #5

During the last week of classes, you will be expected to present your thesis/capstone project topic in a formal proposal environment. This session is open to all faculty and your classmates. Your grade for this presentation will be based on the quality of your presentation and mastery of the material, your ability to respond to content questions from the audience, and your overall professionalism.

### VI. **Proposal documents (20%):** Assesses Course Learning Outcome #7

The culmination of your semester's work will be a completed proposal document to be submitted via Canvas. This document will be graded based on quality of content, the degree to which you have addressed all the major aspects of your thesis/project topic, and your ability to meet department guidelines for completed thesis/capstone project. Your proposal document should include the following items and will be due in parts at various dates throughout the semester:

- Research Question(s): You will identify your question of interest for the Proposal Project.
- Introduction and Literature Review
- Proposed Methods and Data Analysis

### VII. **Final Exam (20%):** Assesses Course Learning Outcomes #1-4, #6

The final exam will be given at the end of the quad and will be summative over the course content covered in class. This exam will be distributed via Canvas one week before the scheduled exam date to allow you adequate time to review the material and prepare your answers. You are free to work in groups or ask for help from the instructor. **However, the final written answers should be in your own words!**

## INCOMPLETE AND LATE ASSIGNMENTS

All assignments are to be submitted via Canvas by the due date and time listed in the calendar.

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).

Missed exams may ONLY be made up with a legal, written excuse. A missed exam for an approved reason MUST be completed prior to the subsequent module.

## 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 3 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, etc.	20
Reading Assignments	25
Written Assignments	20
Other Assignments & Learning Activities	24
Quizzes, Surveys	24
<b>Total Hours</b>	<b>113</b>

## Grading Points

Course Assignments	Points
Discussion Board	50
Online Quizzes	40
Human Subjects Protection Certification	10
Assignments	100
Proposal Presentation	100
Proposal Documents	100
Final Exam Assignment	100
<b>Total Course Points: 500</b>	

**NOTE:** It is your responsibility to maintain your class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), you have the responsibility to first contact the professor. Then if no accommodations can be made, you are responsible to follow through (provided the drop date meets the stated calendar deadline established by the university).

## Grade Scale

A	461-500	B-	396-410	D+	331-345
A-	446-460	C+	381-395	D	311-330
B+	431-445	C	361-380	D-	296-310
B	411-430	C-	346-360	F	0-295

## 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.

## ACADEMIC HONESTY

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** for full text.

## **ATTENDANCE AND PARTICIPATION POLICY**

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** for full text. Since this is a blended course of face-to-face and online class meetings, participation in the online modules will be counted as part of the week's attendance record above and beyond the face-to-face time. Participation in an online module may be done by completing a quiz, participating in the Discussion in Canvas, or submitting a completed assignment. Missing two online days during the course will constitute 10% of the course being missed; missing three online days will constitute 20% of the course being missed. Face-to-face time will be determined by actual hours.

## **ACADEMIC STANDING**

Graduate students at Point Loma must obtain a 3.0 GPA to remain in good standing in the MS Kinesiology program:

**[http://catalog.pointloma.edu/content.php?catoid=20&navoid=1403#Academic\\_Standing](http://catalog.pointloma.edu/content.php?catoid=20&navoid=1403#Academic_Standing)**

Additionally, all graduate students need to earn a C or higher in all graduate courses according to the catalog grading policy:

## **ACADEMIC ACCOMMODATIONS**

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 accommodations or adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in Rm. 312C at the Mission Valley Regional Center via **[DRC@pointloma.edu](mailto:DRC@pointloma.edu)** or 619.849.2533. The DRC's policies and procedures for assisting such students in the development of an appropriate Accommodation Plan (AP) allows PLNU to comply with Section 504/508 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 and official disability documentation, the DRC will contact the student within 15 business days to schedule an AP meeting. During the AP meeting an Accommodation Plan will be established to meet the student's specific disability-related needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each quad/semester. The AP must be implemented in all such courses by faculty. All questions should be directed to the DRC for clarification.

## **SPIRITUAL CARE**

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 Liberty Station campus we have an onsite chaplain, Rev. Wil Ryland who is available during class break times across the week. If you have questions, desire to meet with Rev Ryland or prayer requests you can contact him directly at **[gradchaplainlibertystation@pointloma.edu](mailto:gradchaplainlibertystation@pointloma.edu)**. In addition, there are resources for your Christian faith journey available on the **[Graduate Student Life](#)** webpage.

## **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.

## **FINAL EXAMINATION POLICY**

Successful completion of this class requires submitting the completed final examination **on its scheduled day**.

## **INFORMATION LITERACY**

The curriculum of the MS-KIN is designed so that you develop skills in scientific writing, performing statistical analysis of data, reading and critically appraising primary literature, and incorporating current best evidence into your professional practice. Not all information is equally sound or applicable to your practice. Various assignments within this course are designed to accomplish the goal of informational literacy—to evaluate the validity and importance of information obtained from any source and use the information appropriately to solve relevant problems. These assignments include: SPSS Output Reports, in-class article discussions, in-class discussion of experimental design, review of the literature related to your proposal, presentation of proposal. We will regularly direct you to the Ryan Library to accomplish these assignments

## **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 **Technology and System Requirements** information. Additionally, students are required to have headphone speakers compatible with their computer available to use. If a student is in need of technological resources please contact **student-tech-request@pointloma.edu**.

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