

POINT LOMA NAZARENE UNIVERSITY
Department of Kinesiology
KIN340 Physiology of Exercise
Spring 2017

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| Instructor: | Josh Dexheimer MS, CSCS, USAW, PES |
| Office: | Kin #12 |
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| E-Mail: | jdexheim@pointloma.edu |
| Time: | MWF: 8:30-9:25am; 11-11:55am |
| Location: | Kinesiology 2 |
| Office Hours: | T: 8-11am; TH: 8-11am 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.

If you have any questions about the material in this course, feel free to contact me via email or schedule an appointment.

****I am here to help you in whatever way you need. Feel free to come to me with questions about the course, your life, your future, your career, or anything else that comes up. You all matter greatly to me.**

I. Catalog Description:

A study of the effects of vigorous physical activity upon the systems of the body; development of an understanding of factors which constitute training of the human body for high levels of health and physical performance.

***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 3 unit class delivered over 16 weeks. Specific details about how the class meets the credit hour requirement can be provided upon request.

II. Student Learning Outcomes:

After completion of this course students will be able to:

1. Demonstrate a working knowledge of the structure, function, and physiological concepts surrounding exercising skeletal muscle.
2. Demonstrate a working knowledge of the essentials of human metabolism and bioenergetics with a special focus on how they relate to physical activity.
3. Demonstrate the skills necessary to measure and compute energy expenditure and fatigue.
4. Demonstrate a working knowledge of hormonal activity during exercise.
5. Demonstrate a working knowledge of the physiology of the cardiovascular system with special emphasis on how it works under conditions of vigorous physical activity.
6. Demonstrate a working knowledge of the physiology of the respiratory system with special emphasis on how it works under conditions of vigorous physical activity.
7. Demonstrate a working knowledge of the muscular, cardiovascular, and respiratory acute and chronic responses to physical activity.
8. Demonstrate a working knowledge of the general principles of endurance and resistance exercise training.
9. Describe the adaptations to resistance and endurance exercise training.
10. Manipulate a resistance training program to invoke different physiological responses.
11. Demonstrate a working knowledge of the effects of exercise in cold, heat, and altitude extremes.
12. Demonstrate a working knowledge of ergogenic aids and how they physiologically may improve performance.
13. Describe the pathogenesis of type 2 diabetes, cardiovascular disease, and sarcopenia.
14. Describe the physiological effects of exercise on the pathogenesis of cardiovascular disease, type 2 diabetes, and sarcopenia.

Core Competencies Assessed in this course

1. Quantitative literacy is assessed with the “VO₂max lab worksheet” (see assignments below)
2. Critical Thinking is assessed with the “Final Concept Map Paper” (see assignments below)
3. Information Literacy “Final Concept Map Paper” (see assignments below)
4. Writing Communication “Final Concept Map Paper” (see assignments below)

III. Required Materials

1. **Textbook:** Kenney WL, Wilmore JH, and Costill DL. Physiology of Sport and Exercise. Human Kinetics Publishing Co., Champaign, IL, **6th Edition**, 2011.

IV. Educational Opportunities

1. **Quizzes:** Quizzes will be administered via Canvas on most Fridays. The quiz will be on material discussed in previous class meetings. Quizzes will be online and worth 10 points. Students will have the first 10 minutes to take their quizzes via Canvas on the day of the quiz.

2. **Concept Maps 1 & 2:** Information from class notes and the textbook will be used to create flow diagrams explaining a muscular contraction from the nerve impulse to cross-bridge formation and contraction/relaxation (#1) and acute and chronic cardiopulmonary responses/adaptations to aerobic exercise (#2). Students will use the free concept map website bubbl.us. For each account made on bubbl.us you can make 3 mind maps. The maps must be exported as an image and uploaded to canvas before the due date and time.
3. **Final Concept Map:** This will be a more detailed concept map with students able to pick **one** of the two following topics: the effects of prolonged (3 months at least) endurance exercise training on atherosclerosis or progressive resistance training (3 months at least) on sarcopenia and aging. The map must be accompanied by a short paper, maximum 1 page paper, explaining each portion of the map. You will need to use 5 peer-reviewed references as your sources for this concept map. Do not use a review article.
4. **Fuel for Exercise Paper:** Information from class notes and the textbook will be used to construct a half page to one page paper on the topic of “Fuel for Exercise”. Students will be limited to 500 words, using Aerial font size 11. Half-inch margins will be used all around. Students will be provided the prompt on canvas.
5. **Lab Reports:** There will be a short lab report due 1 week after each laboratory experience in the class. Most labs will consist of volunteers from class participating in the exercise testing then each student individually completing the report.
6. **Classroom Participation:** Class attendance and participation is key to your success in class and you will receive points based on your attendance and participation. If you miss class you will not receive points for that day. You cannot participate if you are not present.
7. **Lecture Exams:** The exams will be designed to test the students’ comprehension of material in the previous sections and new material presented via lectures and independent studying of the textbook. Questions will include: multiple choice, fill in the blank, matching, true/false, and short answer format.
8. **Final Exam:** The final exam will have a new material portion worth 50 points and a cumulative portion worth 100 points. The cumulative portion will be in a “Major Concepts” format. Information from the entire semester will be tested. The Major Concepts format means that student will only be tested on the large and most important concepts of the course.

V. Course Grading:

| Item | Points | Total Points |
|---------------------|---------------------|--------------|
| 1. Quizzes | 12 @ 10 points each | 120 |
| 2. Exams | 3 @ 100 points each | 300 |
| 3. Concept Maps 1&2 | 2 @ 25 points each | 50 |

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| 4. Fuel for Exer. Paper | 1 @ 25 points | 25 |
| 2. Participation | 1 @ 100 points each | 100 |
| 5. Lab Reports | 2 @ 25 points each | 50 |
| 7. Final Concept Map | 1 @ 75 points | 75 |
| 8. Final Exam | 1 @ 150 Points | 150 |
| Total | | 870 |

| <u>Grade</u> | <u>Percentage Points</u> |
|--------------|--------------------------|
| A | 93-100 |
| A- | 90-92 |
| B+ | 87-89 |
| B | 83-86 |
| B- | 80-82 |
| C+ | 77-79 |
| C | 73-76 |
| C- | 70-72 |
| D+ | 67-69 |
| D | 62-66 |
| D- | 60-62 |
| F | 0-59 |

VI. Course Guidelines

1. **Attendance:** Students are required to attend class every class period unless they notify the professor in advance. Excused absences for emergencies are accepted with notification ASAP. Role will be taken at the start of each class. 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. See [Academic Policies](#) in the (undergrad/graduate as appropriate) academic catalog.
2. **Late Work:** Late assignments will be deducted 20% and if over 1-week late the resulting score will be a 0.
3. **Make-Ups:** Make up exams/quizzes will be given only if the professor is notified of the excused absence prior to the missed class or if the student has a legitimate emergency. No make-up labs will be allowed.
4. **Email:** Email will be a main form of communication used by the professor outside of class as well. Students are expected to check their email at least on a daily basis. If you

know of issues with your @pointloma.edu account please notify the professor immediately.

5. **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 request academic accommodations. At Point Loma Nazarene University, students must request that academic accommodations by filing 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. See [Academic Policies](#) in the (undergrad/graduate as appropriate) academic catalog.
6. **Cheating and Plagiarism:** Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work. Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the student handbook:
http://www.pointloma.edu/Handbook/Policies/Academic_Honesty.htm

PLNU Policies:

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. Incompletes will only be assigned in extremely unusual circumstances.

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted on the [Class Schedules](#) site. No requests for early examinations or alternative days will be approved.

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 [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See [Disability Resource Center](#) for additional information.

PLNU 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](#) in the Undergraduate Academic Catalog.

VII. Tentative Course Schedule

| Date | Topic | Assignment Due | Required Reading |
|----------|--------------------------------------|---|------------------|
| 1/10 (T) | Introduction/Skeletal Muscle | | Chapter 1 |
| 1/11 (W) | Skeletal Muscle | | Chapter 1 |
| 1/13 (F) | Neural Control | Quiz #1 (Class on the Track) | Chapter 3 |
| 1/16 (M) | MLK Day | | |
| 1/18 (W) | Metabolism/Bioenergetics | | Chapter 2 |
| 1/20 (F) | Metabolism/Bioenergetics | Quiz #2 | Chapter 2 |
| 1/23 (M) | Metabolism/Bioenergetics | (Class on the Track) | Chapter 2 |
| 1/25 (W) | Hormonal Control | | Chapter 4 |
| 1/27 (F) | Hormonal Control | Quiz #3 | Chapter 4 |
| 1/30 (M) | Review #1 | Concept Map #1 Due | |
| 2/1 (W) | Exam #1 | Exam #1 | |
| 2/3 (F) | Energy Expenditure/Fatigue | | Chapter 5 |
| 2/6 (M) | Energy Expenditure/Fatigue | Quiz #4 | Chapter 5 |
| 2/8 (W) | EE/EPOC Lab | (Class in Rohr 112) | |
| 2/10 (F) | Energy Expenditure/Fatigue | Quiz #5 | Chapter 5 |
| 2/13 (M) | Cardiovascular | | Chapter 6 |
| 2/15 (W) | Cardiovascular/Respiratory | Lab #1 Due (Class on the Track) | Chapter 6 and 7 |
| 2/17 (F) | Respiratory | Quiz #6 | Chapter 7 |
| 2/20 (M) | Cardiopulmonary Response to exercise | | Chapter 8 |
| 2/22 (W) | VO_{2max} Lab | (Class in Rohr 112) | |

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| 2/24 (F) | Cardiopulmonary Response to exercise | Quiz #7 | Chapter 8 |
| 2/27 (M) | Cardiopulmonary Response to exercise | | Chapter 8 |
| 3/1 (W) | Cardiopulmonary Response to exercise | Lab #2 Due (Class on the Track) | Chapter 8 |
| 3/6-10 | Spring Break (No Class Friday; Online Lecture) | | |
| 3/13 (M) | Review Day #2 | Fuel for Exercise Paper Due | |
| 3/15 (W) | Exam #2 | Exam #2 | |
| 3/17 (F) | Training Principles | | Chapters 9, 14, PPT |
| 3/20 (M) | Training Principles /Adaptations to resistance training | (Class on the Track) | Chapter 10, PPT |
| 3/22 (W) | Adaptations to resistance training | | Chapter 10, PPT |
| 3/24 (F) | Adaptations to endurance training | Quiz #8 | Chapter 10, PPT |
| 3/27 (M) | Adaptations to endurance training | (Class on the Track) | Chapter 10, PPT |
| 3/29 (W) | Exercise in the cold | | Chapter 12 |
| 3/31 (F) | Exercise in the heat | Quiz #9 | Chapter 12 |
| 4/3 (M) | Exercise in the altitude | | Chapter 13 |
| 4/5 (W) | Exercise in the altitude | | Chapter 13 |
| 4/7 (F) | Review #3 | Quiz #10 Concept Map #2 Due | |
| 4/10 (M) | Exam #3 | Exam #3 | |
| 4/12 (W) | Aging and Exercise | | Chapter 18, PPT |
| 4/13-17 | Easter Break! | | |
| 4/19 (W) | Aging and Exercise | | Chapter 18, PPT |
| 4/21 (F) | Obesity and Nutrition | Quiz #11 | Chapters 22 and 15 |
| 4/24 (M) | Obesity and Nutrition | | Chapters 22 and 15 |
| 4/26 (W) | CVD and Physical Activity | | Chapter 21 |
| 4/28 (F) | CVD and Physical Activity | Quiz #12 | Chapter 21 |
| | Ergogenic Aids | (If we can get to it) | Chapter 16 |
| See section # | Final Concept Map Final Exam: Section 1 Monday 7:30am-10am Section 2 Wednesday 10:30am-1pm | | |

Final Exam: Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted on the [Class Schedules](#) site. No requests for early examinations or alternative days will be approved.