

Biol 105 – Biology of Exercise – Spring 2011  
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**Consult the Moodle site for updates to this syllabus.**

**Course objectives:**

- Students will understand the physiological mechanisms of the human body during exercise.
  - We will examine the working of each physiological system (i.e. heart, lungs, kidney) during exercise.
  - We will consider both the short-term responses to exercise, and also how the body responds to long-term exercise programs (training).
  - In-class quizzes will be used to assess student accomplishments in this area.
- Students will critically evaluate and write about topics in exercise physiology.
  - We will interpret methods and results of exercise biology studies.
  - We will explore the structure of scientific papers.
  - Students will evaluate a scientific research paper and then write a “News” article that explains and interprets the paper for non-scientists.
- Students will connect the science we are learning in class with other aspects of their lives.
  - We will examine issues in exercise science that are relevant to the interests of the class.
  - Connection papers will enable students to explore the links between course material and other aspects of their lives.

Why should we use exercise to think about biology? One reason is that many of us exercise. Thus, we have an intuitive understanding of how the body responds during exercise and long-term training. We can use this understanding as the basis for an in-depth look at how the body works. Second, exercise has traditionally been used by physiologists to study human biology. Scientists can learn only so much about human physiology by examining resting subjects; to fully understand how we work, it is necessary to study how we respond to stresses. Exercise is the most stressful event that we routinely experience, and it is one that many of us undertake voluntarily. Thus, exercise has been a convenient tool for exploring how the physiological systems of the body respond under stressful conditions.

**Prerequisites:** None. This course is designed for non-biology majors and no prior knowledge of biology will be assumed.

**Text and reading:** This course has two texts:

- Physiology of Sport and Exercise, Fourth Edition. Jack H. Wilmore, David Costill, W. Larry Kenney, 2007.
- Reading Primary Literature: A practical guide to evaluating research articles in biology. Christopher Gillen, 2007.
- Additionally, reserve readings will be assigned some weeks. Check the Moodle site. Please come to class prepared to discuss reserve reading assignments.

**How to do well in this class:**

- ATTEND CLASS. My quizzes are based on the material we cover in lecture. Lectures will cover some material not contained in the readings.
- Learn the vocabulary

- Read assignments before coming to class, review them afterwards to consolidate material
- Stay in contact with the instructor. E-mail is the best way to contact me - [gillenc@kenyon.edu](mailto:gillenc@kenyon.edu).

**Class attendance and participation:** Class attendance is mandatory. Class participation and attendance will account for 10% of your grade. Additionally, there will be a 3 point reduction in the final average for every 3 unexcused absences (no penalty for less than 3 unexcused absences). To receive an A or and A- in this class, you must participate consistently across the entire semester. To participate intelligently in class, it is imperative that you read the assigned material before each class. Please feel free to ask questions, add insights, request clarifications, etc. at any time during class. Speaking in class will be a primary determinant of class participation, but I realize that there are many different styles and will consider other contributions.

**Project:** See the project instruction sheet on the Moodle site.

**Quizzes:** Fifteen minute quizzes will be composed of multiple choice and short answer questions. You will be allowed to bring into the quiz one 5" X 8" index card with notes in your own handwriting (not a computer-generated printout) on one side of the page only. You will hand in the note sheet with the quiz. Beware: these note sheets are not a substitute for studying. Many students report that they never consult their note sheets. Example multiple choice questions are on the Moodle site.

**Connection papers:** When you see a connection between this class and something else in your life (another class, a sports event, something in the news, a seminar that you attend, etc), write a 1 page paper (no more than 1 page, double spaced, 12 point font) describing the connection. Grading criteria:

- Number submitted. You must submit at least 7 connection papers over the course of the semester. You may not submit more than 12. You may not submit more than 1 connection paper within any 7 day period.
- Diversity of submissions. At the end of the semester, excellent portfolios of connection papers will connect to a broad range of the topics we covered in class and connect to a range of different aspects outside the class.
- Quality. Excellent connection papers will make interesting connections to course content. They will be well-written and engaging.

**Academic honesty:** Consult the course catalog for Kenyon's official policy on academic honesty. Additional guidelines follow:

- **Reports and papers and weekly assignments must be written independently.** You are encouraged to exchange information with your peers in this class and to discuss class material and assignments with your classmates. However, you must write all papers (anything that is submitted to me) independently. Independently means by yourself. Sharing text by exchanging files is expressly forbidden.
- **All forms of collaboration and sharing of information must be explicitly acknowledged.** This means that you must state who you worked with and you must state the nature of the interaction. For example: "Jane Doe and I worked together to produce Figure 1. We both contributed to creating Figure 1, and the same Figure is reproduced in each of our papers." or "John Doe and I discussed the interpretation of our results before I wrote this paper. The paragraph on possible sources of error was largely influenced by this discussion." or "Professor X provided the picture of the experimental setup."
- **Citations of references must be done properly.** Direct quotations should not be used unless absolutely necessary. When direct quotations are used, the quoted text must be in quotation marks and cited properly. Close paraphrasing (simply rephrasing another's text without substantially altering the flow of ideas) is not allowed. Please refer to the guidelines in the Student Handbook and for more details. Please also be aware that scientific writing has a specific set of rules and conventions that may differ from those in other disciplines. If you are unsure about proper citation, please ask me.

- **Adherence to the above guidelines is the responsibility of the student.** You must understand and follow proper citation and acknowledgment formats.
- **Plagiarism detection.** You may be asked to submit work to software that detects plagiarism (i.e. Turn It In) and/or I may check submitted work for plagiarism.
- **If you have questions or are unsure, please ask me.**

**Students with special needs:** Students with disabilities who will be taking this course and may need disability related academic accommodations are encouraged to make an appointment to see me as soon as possible to discuss your learning needs. Also, you are required to register for support services with the Office of Disability Services. Please contact Erin Salva at 5453 or e-mail [salvae@kenyon.edu](mailto:salvae@kenyon.edu).

**Grading:** Please see me if you want to know your current grade in the class.

Quizzes = 30%

Project = 30%

Connection papers = 30%

Attendance, oral presentations, and participation = 10%

**Deadlines and conflicts:** Written work will be handed in electronically via the Moodle site. Work in this class that is handed in late will be penalized 1/3 grade per day. For example, a B+ will become a B. If conflicts exist with scheduled extracurricular events, students must contact me one week before the date to discuss ways to handle the conflict. In the case of quizzes, it is expected that students will take the quiz before the scheduled date. Written assignments should be handed in before the due date if a class is to be missed because of a scheduled event.

**Schedule:** This is a tentative schedule. Additional readings may be assigned. Reserve readings, assignments and updates to this schedule will be posted on the Moodle site.

Week	Date	Mon – Wed Topic	Fri topic	Reading	Assignment (due Friday)
1	1/17	Muscle and bone Is barefoot running a good idea? What is exercise?	Intro to research articles	D. M. Bramble & D. E. Lieberman. 2004. Wilmore 13-22 RPL Sections 1-3 (Friday)	Personal statements
2	1/24	Muscle contraction How heavy should your baseball bat be?	Intro to science writing	Wilmore 25-34, 42-44 They Say / I Say Chapter (Friday)	Quiz 1
3	1/31	Nerves and regulation Why does practice make perfect?	Article intro sections	Wilmore Chapter 3 RPL Section 4 (Friday)	Paper selection (PA1)
4	2/7	Cellular metabolism Should you take creatine?	Scientific method	Wilmore 47-59, 376-378	Quiz 2
5	2/14	Muscle fiber type Are we born sprinters or marathoners?	Article methods sections	Wilmore 35-42, 203-212 RPL Section 5 (Friday)	Introduction essay (PA2)
6	2/21	Fatigue and energy Why can't you run faster and longer?	Ethics of human research	Wilmore Chapter 4	Quiz 3
7	2/28	Nutrition Should men and women eat the same pre-race meals?	Graphs and statistics	Wilmore 59-71, 328-341, 348-350, 423-430 RPL Section 6 (Friday)	Methods essay (PA3)
8	3/21	Circulation Why do athletes have big hearts?	Quiz only this Friday	Wilmore Chapter 5, 161-176	Quiz 4
9	3/28	Respiration Should you live high or train high?	Interpretation and criticism in science	Wilmore Chapter 6, 279-292 RPL Section 7 and 8 (Friday)	Results essay (PA4)
10	4/4	Training mechanisms Can you train too hard?	Science writing	Wilmore 187-192, 297-308	Science writing examples
11	4/11	Training effects Is athletic ability genetically determined?	Science writing	Wilmore Chapter 10	Quiz 5
12	4/18	Exercise in the heat Does performance clothing help?	Peer review of article drafts	Wilmore 253-270	News article draft (PA5)
13	4/25	Fluid balance Does Gatorade have enough salt?	TBA	Wilmore 71-75, 341-348, 351-352	Quiz 6
14	5/2	Project presentations	TBA		
Finals	5/12	Final paper due			News article final (PA6)