**BIOS 3756-A/B: Physiology Laboratory, Spring 2019**

**Georgia Institute of Technology**

Instructors: Minoru Shinohara, PhD

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Office hours: Dr. Shinohara and TBD: by appointment (due to off campus office)

Location: Cherry Emerson 123

Class Times: BIOS 3756A: Tuesday 12:00-2:40 pm?

BIOS 3756B: Tuesday 3:00-5:40 pm?

1 hour credit

Required Text: Laboratory Protocols will be posted on CANVAS

Supplemental Human Physiology: An Integrated Approach, 7th ed.

Text: 2016: Pearson ISBN 13:978-0-321-98122-6

Pre/Co-requisites: BIOS 3753 (pre-req) and BIOS 3755 (co-req)

**Course Description:** Students will perform non-invasive human experiments supplemented with in vitro tissues experiments to explore fundamental physiological concepts and learn basic methods of physiological measurements. The focus of the laboratory will be human physiology. Students will explore the functions of the nervous, muscular, cardiovascular, and respiratory systems.

**Student learning objectives:**

1. To learn basic physiological measurement techniques.
2. To interpret data within the context of known physiological concepts.
3. To organize and present data in an effective manner.

**Evaluation:** Lab work sheets 40% (10 labs without reports)

Lab Report 20%

Midterm Exam 20%

Final Exam 20%

**Grading:** A, 90%-100%

B, 80%-89%

C, 70%-79%

D, 60%-69%

F, 59% and below

**Note**: *Make up laboratories and exams will be considered only in the case of an emergency (documentation required) or if prior arrangements have been made*. Laboratories are extremely difficult to make up, do not miss them! In the case of an emergency, you must contact the instructor within 24 hours and provide documentation of the emergency. If you know you will miss a lab or exam because of a school sponsored event or important personal issue, you must contact the instructor at least **1 week prior** in order to make necessary arrangements to complete the missed work.In most cases, you should complete the work *before* your absence.

**Laboratory Safety**

All students are required to sign a lab safety agreement prior to performing any laboratory experiments.

ACADEMIC HONOR CODE

**Cheating off of another person’s test or quiz is unethical and unacceptable. Cheating off of anyone else’s work is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly.**

**Use of any previous semester course materials is allowed for this course; however, I remind you that while they may serve as examples for you, they are not guidelines for any tests, quizzes, or any other coursework that may be assigned during the semester.**

**I consider the following behaviors to be cheating:**

\*using false excuse to delay completing a laboratory/test

\*learning what is on a test from someone who has already taken it

\*copying from another student on a test with or without their knowledge

\*helping someone else cheat on a test/lab report

\*using unauthorized notes on a test

\*using unauthorized electronic device to obtain information during test

\*working with others on an assignment when asked for individual work

\*paraphrasing/copying from written or internet source without referencing it

\*fabricating/falsifying a bibliography

\*turning in work copied from/done by another

\*obtaining paper from term paper mill

\*fabricating or falsifying research data

List adapted from McCabe, Donald. “Cheating among college and university students: a North American Perspective,” International Journal for Educational Integrity, 1.1 (2005).

**For any questions involving these or any other Academic Honor Code issues, please consult me or** [**www.honor.gatech.edu**](http://www.honor.gatech.edu)

Suggestions for getting the most from this class:

1. You will need to read the laboratory protocol and any assigned reading prior to the laboratory meeting.
2. Participate in conducting the experiments! In general you will be working with one or two lab partners, do not allow your partners to do all the work!
3. Based on your knowledge of physiology, try to guess the outcome of the experiment prior to performing it (form a hypothesis). If the outcome is different from what you expected, try to form an alternative hypothesis.

3. Occasionally additional readings may be posted to T-square – published research articles on the topic of the week. Be prepared to discuss them in class.

**Laboratory protocols will be posted on CANVAS. It is the student’s responsibility to read them ahead of time and bring them to lab.**

**Laboratory Schedule (tentative, subject to change)**

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Date | Laboratory | Supplemental Reading |
| 1 | January 8 | No class (instructor/TA preparation) |  |
| 2 | January 15 | Introduction to iWorx Data Acquisition System |  |
| 3 | January 22 | Electrocardiogram | Chapter 14, p 457-466 |
| 4 | January 29 | Blood Pressure | Chapter 15, p 482-488 |
| 5 | February 5 | **Pulse Wave Contour Analysis– Lab Report** | Covered in previous readings |
| 6 | February 12 | TBD |  |
| 7 | February 19 | Human Nerve Conduction | Chapter 8, p 246-253 |
| 8 | February 26 | Grip Strength and Electromyography | Chapter 12, p 392-393, 397-400 |
| 9 | March 5 | Electromyogram in Various Activities | Covered in previous readings |
| 10 | March 12 | **Midterm Exam** |  |
| 11 | March 19 | Spring Break |  |
| 12 | March 26 | Integrated Cardiorespiration (?) | Chapter 25, p 787-794 |
| 13 | April 2 | A: Spirometry  B: Reflexes | **Spirometry**  Chapter 15, p 492-495  Chapter 17, p 535-549  **Reflexes** Chapter 13, p 418-426 |
| 14 | April 9 | A: Reflexes  B: Spirometry |
| 15 | April 16 | Reaction Time | Chapter 10, p 310-324  Chapter 13, p 426-431 |
| 16 | April 23 | No class (home study guide) |  |

**Final Exams:**

**BIOS 3756A: April xx - May x Cherry Emerson xx**

**BIOS 3756B: April xx - May x Cherry Emerson xx**