Contact Information:
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Phone: 221-2784
Office Hours: MW 2:00-3:00, Rm. 113 Adair Hall

Goals:

1) In-depth understanding of the current scientific knowledge of the following physiological processes:
   a) body weight regulation including neural and hormonal control of appetite and metabolism
   b) physiological and molecular mechanisms of diseases that are associated with obesity and inactivity
   c) the role of the fat cell and its secretions in the disease process

2) Understanding of the current treatments for these diseases and the role of exercise

3) Gain competence in understanding, evaluating, and presenting science literature

Format: A seminar course that combines lectures and class discussion. This is an advanced physiology course that assumes a basic background in physiology and/or cell biology. This course includes a written assignment which satisfies the writing requirement in Kinesiology & Health Sciences.

Prerequisites: Human Physiology (KINE 204) or “Introduction to Molecules, Cell and Development“ (BIOL 225)

Grading

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<th>Assignment</th>
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<td>Test #1</td>
<td>30</td>
<td>Sept. 21</td>
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<td>Test #2</td>
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<td>Final Exam</td>
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<td>Paper Discussions</td>
<td>40</td>
<td>[4 pts. Each – 11 Discussions (drop lowest)]</td>
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<td>Paper</td>
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Grading Cutpoints: 90% (A), 87% (B+), 80% (B), 77% (C+), 70% (C), 67% (D+), 60% (D), <60% (F). However, if the mean is <80%, then grading is on the curve, with the mean representing the lowest B.

**Tests:**

- Format is multiple choice and/or short answer. Study questions will be posted on Blackboard.

- Although it is multiple choice, there is an opportunity to explain any answers you choose. If a wrong answer is chosen, a logical, valid explanation can lead to partial or even full credit. If the correct answer is chosen, there will be no deductions for invalid explanations.

- If an alternate test date is needed due to scheduling conflicts, an **earlier** test date will be allowed if pre-arranged (1 week prior) with the professor. If you are ill the day before or day of the test, you may reschedule the test within the 2 days after the test day without penalty. If you are sick for more than 3 days or have a personal crisis, you should contact the Dean of Students for late accommodations from your professors, and you will be allowed to take the test late without penalty. Without an excuse, a late test will also be allowed, but points will be deducted (5% if taken within a week of the test, 10% deduction after one week).

- **Alternate dates for final exams must be approved by the Dean of Students.**

**Paper Discussions:**

Paper discussions will consist of reading an assigned original research paper, and then writing a 1-page summary of the paper (**1 point, due in class on discussion day**), and discussing the paper in class (**3 points**).

The written summary should include the purpose/hypothesis of the paper, the key methods used, what information each figure/table conveys, and conclusions of the paper. A clear, concise written summary will be a useful tool during the class discussion. You will turn in a written copy at the beginning of class or e-mail (rlooft@wm.edu) it to me before class.

In class, you will have time to discuss individual experiments or figures within a small group, and then will be called upon to share your conclusions or explain a figure. You should come to class prepared to discuss any figure/table with your group. An advanced analysis would include the ability to discuss: limitations of the methods used, limitations of the conclusions made based on the evidence provided, ideas for future experiments or ways to improve the study. Questions regarding the papers will appear on tests.

If you are going to miss a paper discussion, you may turn in a more detailed written summary (~3 pages) instead, which will be **due by 5:00 on the day of the discussion**, or points will be
deducted (5% if turned in within 1 week, 10% after 1 week). **You can miss one class session without affecting your participation grade, but are responsible for understanding the content of the paper missed.** There are 11 Discussion sessions. You can miss one or drop one (10 x 4 pts each = 40 pts total), and make-up one with an extended written analysis. Be advised that the written analysis is carefully scrutinized and it is difficult to receive full credit.

**Written Assignment:**

You will write a review about a topic related to the course. [For an example of a review article, see Blackboard: “Lectures/Exercise Mimetics – Review Article”]

Getting Started: Using PubMed (http://www.ncbi.nlm.nih.gov/pubmed), search for articles on your topic of interest. You can choose review articles (these give you a summary of all the prominent research on the topic) by selecting “Article types/Reviews” in the left-side menu. Select the most recent and relevant review article. Read the review article and look up any pertinent references. Do not rewrite the review article, but instead use it as a starting point to understand the overall research in the field. Then focus your topic and find original research articles on your topic (at least 15 articles, likely more). Read the articles and explain the salient results in your paper. The more papers you read, the better command you will have of the topic.

Topic: There is a lot of flexibility in the topic, but it must be pre-approved. Topic examples: leptin, leptin resistance, fto gene, adiponectin, ghrelin, diabetes and obesity, hypertension and obesity, gut bacteria, and exercise and weight loss. If there are too few papers (<10) on your topic then you will need to expand it. If there are too many papers (>100), then you will need to focus on a sub-topic.

Format: 6-8 pages, double-spaced, Time New Roman 12-point font, with references numbered within the text and listed in a bibliography at the end of the paper. It must include reference to at least **15 original research papers** (not including review articles). Without at least 15 original research paper references, the paper will receive no higher than a “C” grade. Original research papers contain a Methods section and original data. Review papers only summarize studies pertaining to the topic and do not present original data. See sample paper on Blackboard for formatting.

Peer Review: You will be expected to read and comment on one of your classmate’s first draft and return comments within one week to your classmate (and turn comments into me via e-mail – rlooft@wm.edu). Please insert comments using Microsoft Word - “Review/Track Changes” function. You will be reviewing the paper for readability, grammar and typos, logical structure, and whether there is the minimum number of original references. You are not required to review the paper for scientific accuracy or whether the best references were chosen. However, if you are able to comment on this, that would be an advanced peer review.

**Timeline:**

- Topic Approval – Sept. 9
- Outline – Sept. 23
- 1st Draft for Peer Review – Oct. 19
Topics:

I. Overview of Diseases of Obesity/Inactivity in U.S., Metabolic Syndrome  
II. Neural and Hormonal Control of Appetite and Metabolism  
III. Causes of Obesity and Treatments  
IV. Adipocytokines  
IV. Physiological and molecular mechanisms of Type-II diabetes, and how exercise and weight reduction counteract its effects  
V. Physiological and molecular mechanisms of hyperlipidemia (high blood lipids and cholesterol) and methods of treatment  
VI. Physiological and molecular mechanisms of hypertension (high blood pressure) and methods of treatment  
VIII. Physiological and molecular mechanisms of cardiovascular disease, and how exercise and weight reduction counteract its effects

Additional Resources (Information from these sites can be cited in your paper):

American Heart Association (www.americanheart.org); This website has current information on particular cardiovascular diseases and risk factors. This organization publishes the top cardiovascular journals and provides some funding for cardiovascular research.

National Heart, Lung, and Blood Institute (www.nhlbi.nih.gov); This is a branch of the National Institutes of Health, which is the major funding organization for cardiovascular research. The website also has information on cardiovascular diseases and recent scientific findings.

National Institute of Diabetes and Digestive and Kidney Diseases (www.niddk.nih.gov); This is a branch of the National Institutes of Health, which is a major funding organization for diabetes research. The website also has information on diabetes and recent scientific findings.

American Diabetes Association (www.diabetes.org); This website has current information on the pathology and treatment of diabetes and provides some funding for diabetes research.

Center for Disease Control (cdc.gov); This website has statistics and information on major diseases including cardiovascular disease.
Physiology of Obesity - Fall 2015 Schedule

Aug. 26    Lecture #1: Obesity and Metabolic Syndrome, Inactivity
Aug. 31    Lecture #2: Appetite Control, Causes of Obesity
Sept. 2    Paper #1
Sept. 7    Lecture #3: Causes of Obesity
Sept. 9    Paper #2 [Topic Approval]
Sept. 14   Lecture #4: Treatments for Obesity, Abdominal Obesity
Sept. 16   Paper #3
Sept. 21   Test #1
Sept. 23   Lecture #5: Adipokines, Leptin Resistance [Outline Due]
Sept. 28   Paper #4
Sept. 30   Paper #5
Oct. 5     Lecture #6: Brown Adipose Tissue, Diabetes – Mechanisms
Oct. 7     Lecture #7: Diabetes – Mechanisms and Treatments
FALL BREAK
Oct. 14    Paper #6
Oct. 19    Paper #7 [1st Draft for Peer Review]
Oct. 21    Test #2
Oct. 26    Lecture #8: Genetics & Epigenetics of Diabetes and Obesity, Nutrient Metabolism and Dyslipidemia [Peer Review Comments Due]
Oct. 28    Lecture #9: Treatments for Dyslipidemia, Hypertension
Nov. 2     Paper #8
Nov. 4     Paper #9
Nov. 9     Lecture #10: Cardiovascular Disease [2nd Draft Due]
Nov. 11    Lecture #11: Cardiovascular Disease
Nov. 16    Paper #10
Nov. 18    Test #3
Nov. 23    TBA
Nov. 30    Video
Dec. 2     Paper #11

[Final Draft due Friday, Dec. 4 by 5:00 Sharp]

Dec. 9     FINAL EXAM, 9:00-12:00
Papers for Discussion


