

USC Dornsife  
College of Letters,  
Arts and Sciences

**HBIO409 – Metabolic Diseases (4 units)**

**Fall 2015**

**Lecture:** T/Th 2:00-3:20 p.m.

**Location:** THH 203

**Instructor:** Gioia Polidori Francisco, PhD

**Office:** AHF B33

**Office Hours:** Wednesday 2:00-4:00 pm

Friday 1:30-3:30 pm

**Contact Info:** [gpolidor@usc.edu](mailto:gpolidor@usc.edu)

### **Course Description**

Examination of the etiology, prevention and treatments of metabolic disorders such as diabetes mellitus, insulin resistance, metabolic syndrome and obesity as major threats to public health.

*Prerequisite:* BISC 220L (Duplicates credit in former EXSC 409).

### **Learning Objectives**

- To develop a deeper comprehension of the central and cross-disciplinary concepts of human biology, which include, but are not limited to bioenergetics, physiological homeostasis, and metabolic dysfunction.
- To place biological, nutritional and physiopathological knowledge into an applicable and ethical context, especially how biology, physiology and nutrition can contribute to the resolution of sociocultural issues.
- To provide sufficient depth of knowledge for entry-level employment in a wide variety of fields or for graduate study in the health professions or other biology-related disciplines.

### **Required Readings:**

All required readings are available for free on the University library website as follows:

1. Harrison's Principles of Internal Medicine. Dennis Kasper, Anthony Fauci, Stephen Hauser, Dan Longo, J. Larry Jameson, Joseph Loscalzo, McGraw-Hill, 2015  
<http://accessmedicine.mhmedical.com.libproxy.usc.edu/book.aspx?bookid=1130>
2. Metabolic basis of obesity, editor: Ahima Rexford S, Springer, 2011  
<http://link.springer.com.libproxy.usc.edu/book/10.1007%2F978-1-4419-1607-5>
3. The Metabolic Syndrome, 2nd edition, Christopher D Byrne and Sarah H Wild, Wiley, 2011.  
<https://libproxy.usc.edu/login?url=http://site.ebrary.com/lib/uscisd/Doc?id=10484908>

### **Description and Assessment of Assignments**

- Class material will be evaluated via quizzes and exams.

### Additional Policies

•The grading scale is based on the traditional scale as follows:

|                   |                 |                  |
|-------------------|-----------------|------------------|
|                   | <b>A (≥93%)</b> | <b>A- (≥90%)</b> |
| <b>B+ (≥87%)</b>  | <b>B (≥83%)</b> | <b>B- (≥80%)</b> |
| <b>C+ (≥77%)</b>  | <b>C (≥73%)</b> | <b>C- (≥70%)</b> |
| <b>D+ (≥67%)</b>  | <b>D (≥63%)</b> | <b>D- (≥60%)</b> |
| <b>F (≤59.9%)</b> |                 |                  |

- Quizzes will be given during lectures and will be based on the material discussed.
- A midterm exam can be taken after the specified date **ONLY** if the student has a **documented** medical excuse.
- Exams will not be given a letter grade. Only the final grade will be given a letter grade.
- A request to take a make-up exam must be accompanied by evidence of necessity (ie: letter from a doctor) and must be made before the date of the scheduled exam. Make-up exams will be different from the scheduled exam and may be proctored by personnel who do not have extensive knowledge in the area being tested.
- Lecture slides will be posted on blackboard, however, please do not rely entirely on slides, these are meant as a starting point for note-taking.
- The project will focus on novel strategies to prevent/control obesity. It will be based on 4 scientific articles and will entail the development of a novel strategy to combat obesity.

### Grading Breakdown

| <b>Assignment</b>  | <b>Points</b> | <b>% of Grade</b> |
|--------------------|---------------|-------------------|
| Midterm 1          | 200           | 20                |
| Midterm 2          | 200           | 20                |
| Project            | 200           | 20                |
| Final Exam         | 350           | 35                |
| Quizzes            | 50            | 5                 |
| <b>TOTAL</b>       | <b>1000</b>   | <b>100</b>        |
| JEP (Extra Credit) | 25            | 2.5               |

## Tentative Lecture Schedule

| <b>Date</b> | <b>Lecture Topic</b>                   | <b>Harrison's</b> | <b>Ahima</b> | <b>Byrne</b> |
|-------------|--|-------------------|--------------|--------------|
| Aug 25      | Intro & Epidemiology                   |                   |              |              |
| Aug 27      | Energy Expenditure                     |                   | 1            |              |
| Sep 1       | Energy Metabolism                      |                   | 2            |              |
| Sep 3       | Adipose Tissue                         | 77                | 3            |              |
| Sep 8       | Adipokines                             |                   | 4            |              |
| Sep 10      | Obesity                                | 77                |              |              |
| Sep 15      | Immune system and Inflammation         | 314               |              |              |
| Sep 17      | Inflammation and adipose dysfunction   |                   | 9            |              |
| Sep 22      | Revision                               |                   |              |              |
| Sep 24      | <b>Midterm I</b>                       |                   |              |              |
| Sep 29      | Diabetes                               | 344               |              |              |
| Oct 1       | Insulin Resistance                     |                   | 10           |              |
| Oct 6       | Liver                                  | notes             |              |              |
| Oct 8       | Non-Alcoholic Fatty Liver Disease      |                   | 12           | 15           |
| Oct 13      | Lipoproteins and dyslipidemia          | 356               |              |              |
| Oct 15      | Cardiovascular System                  | 224               |              |              |
| Oct 20      | Obesity and Cardiac Dysfunction        |                   |              | 14           |
| Oct 22      | Atherosclerosis                        | 241               |              |              |
| Oct 27      | Revision                               |                   |              | 13           |
| Oct 29      | <b>Midterm II</b>                      |                   |              |              |
| Nov 3       | Project Discussion                     |                   |              |              |
| Nov 5       | Nutrition                              | 73-74             |              |              |
| Nov 10      | Neural control of feeding              |                   | 5            |              |
| Nov 12      | Circadian Rhythms and Metabolism       |                   | 13           |              |
| Nov 17      | Metabolic syndrome (MS) and CR Fitness |                   |              | 1,10         |
| Nov 19      | Genetic predisposition to MS           |                   | 7            | 7            |
| Nov 24      | Metabolic Syndrome and Childhood       |                   | 5            |              |
| Nov 26      | <b>Thanksgiving</b>                    |                   |              |              |
| Dec 1       | Prevention Plans                       |                   |              |              |
| Dec 3       | Revision                               |                   |              |              |
| Dec 5-8     | <b>Study Days</b>                      |                   |              |              |
| Dec 10      | <b>FINAL EXAM</b>                      |                   |              |              |

## Statement on Academic Conduct and Support Systems

### Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/departement/departement-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage [sarc@usc.edu](mailto:sarc@usc.edu) describes reporting options and other resources.

### Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* [http://sait.usc.edu/academicsupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html) provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.