

USC Dornsife
College of Letters,
Arts and Sciences

HBIO302L – Nutrition and Metabolism (4 units)

Fall 2015

Lectures: Tuesday/Thursday; 9:30-10:50 am

Location: GFS 118

Labs: Wednesday 8:00-10:50; Wednesday 2:00-4:50; Thursday 11:00-1:50

Location: PED B16

Instructor: Lorraine P Turcotte, PhD

Office: PED 107

Office Hours: Tuesday/Thursday; 11:00 am- 01:00 pm

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Teaching Assistant: TBA

Lab Director: Emi Embler, PhD

Office: PED 107

Office Hours: TBA

Contact Info: eembler@usc.edu

Course Description

•Gastrointestinal physiology and energy metabolism as it relates to macronutrient intake. Theories and principles of nutrition and their impact on metabolic regulation.

Learning Objectives

- To develop a deeper understanding of the central and cross-disciplinary concepts of human biology, which in this course include bioenergetics, physiological homeostasis and the interrelationship between form and function for the digestive, musculoskeletal and nervous systems.
- To understand the basic principles of enzymatic reactions as they apply to the metabolic pathways.
- To understand and apply the scientific method, including forming hypotheses, designing experiments to test hypotheses, and collecting, analyzing, interpreting, and reporting data.
- To demonstrate proficiency in modern methodologies pertinent to research in biological sciences as they relate to the digestive, musculoskeletal and nervous systems.
- To develop the ability to think critically, analyze, synthesize, and use information to solve problems.
- To place biological, nutritional and physiological knowledge into an applicable and ethical context, especially how biology, physiology and nutrition can contribute to the resolution of ethical, social and environmental issues.
- To provide sufficient depth of knowledge and skill for entry-level employment in a wide variety of fields or for graduate study in the health professions or other biology-related disciplines.

Prerequisite(s): BISC 220L or BISC 221L

Required Readings and Supplementary Materials

- 1) **The Science of Nutrition**, 3rd edition, Thompson, J.L., Manore, M,M, and Vaughan, L.A. Benjamin Cummings, San Francisco, CA, 2013.
- 2) **Biochemistry (Illustrated Review)**, 6th edition, Ferrier, D. Wolters Kluwer/Lippincott Williams & Wilkins, United Kingdom.
- 3) **Lab Manual; available in the bookstore**

Description and Assessment of Assignments

- Class material will be evaluated via homework assignments and exams.
- Material covered in labs will be evaluated via homework and lab assignments as well as classroom exams.

Grading Breakdown

Assignment	Points	% of Grade
Pathway Poster		5
Midterm 1		20
Midterm 2		20
Final Exam		30
Lab Grade		25
TOTAL	0	100

Assignment Submission Policy

- Assignments will be handed in at the beginning of class on the assigned due date.

Additional Policies

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

	A (≥94%)	A- (≥90%)
B+ (≥87%)	B (≥84%)	B- (≥80%)
C+ (≥77%)	C (≥74%)	C- (≥70%)
D+ (≥67%)	D (≥64%)	D- (≥60%)
F (≤59.9%)		

- A midterm exam can be taken after the specified date **ONLY** if the student has a **documented** medical excuse.
- Exams and lab grades will not be given a letter grade. Only the final grade will be given a letter grade.
- The final exam is ***cumulative***.
- A request to take a make-up exam must be accompanied by evidence of necessity (ie: letter from a doctor, plane ticket to a game from an athlete) 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.
- **Grades are NOT rounded or curved.** A grade of 86.99 is a B grade. A final grade of 89.99 will **NOT** be reflected as an A-. It is always difficult to miss a grade boundary by a small amount. But to round up would defeat the purpose of having an objective grading scale and it would also mean that announcing a specific grade boundary is not accurate. That would be unfair. Therefore, I make the grade boundary objective and sharp. **There are NO exceptions.**
- JEP work must be registered with JEP and with ME, Dr. Turcotte, by February 5th. If you are not registered with ME by February 5th, JEP will NOT count towards your final grade. It can give you up to 2% extra points on the final grade. JEP is the oldest and largest university service-learning program in the country. It offers students the unique opportunity to combine academic coursework with experiences in the community surrounding the campus. At the beginning of the semester, a JEP representative will visit our class and tell you more about the opportunities available that semester. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>.
- Notes will **NOT** be posted on blackboard. Class notes and textbook information will form the basis of the material that will be on the exams. If you attend class regularly, you will be updated on the status of lecture notes and course material/announcements.
- Final grades will **NOT** be posted on Blackboard.

Course Schedule: A Weekly Breakdown

Date	Lecture Topic	Reading Chapters	
		Thompson et al	Ferrier
Aug 25	Course Overview	1, 2	
Aug 27	Human Nutrition: Food Pyramid & MyPlate system	1, 2	
Sept 1	Human Digestion	3	
Sept 3	Human Absorption	3	
Sept 8	Digestion of CHO	4	
Sept 10	Digestion of Lipids	5	15
Sept 15	Digestion of Lipids	5	
Sept 17	Digestion of Proteins	6	
Sept 22	Midterm 1		
Sept 24	Energy Balance, Weight control & Diseases	13	
Sept 29	Nutrition & Exercise	14	
Oct 1	Enzymes/ Bioenergetics	7	5
Oct 6	Enzymes/ Bioenergetics		6, 7
Oct 8	Glycolysis		8, 9
Oct 13	Glycolysis / Glycogenolysis		11, 12
Oct 15	Glycogenolysis		11, 12
Oct 20	Regulation of glycolysis/glycogenolysis		8, 9, 11
Oct 22	Midterm 2		
Oct 27	β -oxidation		16
Oct 29	Triglyceride hydrolysis		16
Nov 3	Krebs Cycle		6, 9
Nov 5	Krebs Cycle, Electron Transport Chain		6, 9
Nov 10	Electron Transport Chain		6, 9
Nov 12	Regulation of β -oxidation/triglyceride hydrolysis		16
Nov 17	Gluconeogenesis & Regulation		10
Nov 19	Glycogen synthesis & Regulation		12
Nov 24	Fatty Acid Synthesis & Regulation		16
Nov 26	Thanksgiving Day		
Dec 1	Triglyceride Synthesis & Regulation		16
Dec 3	Review	Pathway Chart DUE	
TBA	Final Examination		

•For the date and time of the final exam for this class, consult the USC Schedule of Classes at www.usc.edu/soc

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/department/department-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 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 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.