Brooklyn College, City University of New York
Department of Health & Nutrition Sciences

HNSC 3210 (EM6): Nutritional Chemistry (3 Credits)
Spring 2018

CLASS MEETINGS:	Monday 6:30-9:00 p.m.
LOCATION:	Boylan 5313
FINAL EXAM:	Monday, May 21st, 6:00-8:00 p.m.

INSTRUCTOR:	Amy Marcinkiewicz
E-MAIL:	AMarcinkiewicz@brooklyn.cuny.edu
OFFICE HOURS:	Monday evenings by appointment; Tuesdays and Thursdays 5:15-6:15 p.m.
	Ingersoll 0119 (basement); 718-951-5000 ext. 1024
DEPT. PHONE:	718-951-5026 (to leave message with department staff)

PREREQUISITES: HNSC 2210 (Human Nutrition) and CHEM 2500 or 3510 (Organic Chemistry)

COURSE DESCRIPTION: Biochemistry of carbohydrates, lipids, proteins, inorganic salts, enzymes, vitamins, hormones. Bioenergetics and oxidation reactions. Pathways of intermediary metabolism. (Not open to students who are enrolled in or have completed Chemistry 4580.)

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

1. Describe the basic elements of biochemistry.
2. Recognize the fundamental structures of nucleic acids, carbohydrates, fats, and proteins.
3. Identify the structural and functional roles of major macronutrient classes – proteins, fats, and carbohydrates – in the human body.
4. Demonstrate working knowledge of nutrient metabolism.
5. Describe the principal mechanisms that regulate the metabolism of proteins, carbohydrates, fats, and cholesterol.
6. Describe the role of nutrients in the production of hormones in the human body, and in hormonal regulation of metabolism.

The course contributes to the following ACEND learning competencies:

KRDN 1.3 Apply critical thinking skills.

KRDN 2.1 Demonstrate effective and professional oral and written communication and documentation.

REQUIRED READINGS:

Textbook: Ferrier DR. Lippincott's Illustrated Reviews: Biochemistry. 7th Edition. 2016. ISBN: 9781496344496. List Price $76.98. *Note: Earlier editions may be used.*

Optional Textbook: Gropper SS, Smith JL, and Carr TP. Advanced Nutrition and Human Metabolism. 7th Edition. 2018. ISBN: 9781305627857.

Journal Articles: Required readings or directions for accessing them will be available on Blackboard.

Other Media: Videos, animations, or directions for accessing internet resources, will be posted on Blackboard.

ASSESSMENT AND GRADING:

Components of Course Grade:	
Assignments	25 points
Exam #1	25 points
Exam #2	25 points
Final Exam	25 points

Grading Scale:	
A+	*see below
A	93.0-100
A-	90.0-92.9
B+	87.0-89.9
B	83.0-86.9
B-	80.0-82.9
C+	77.0-79.9
C	73.0-76.9
C-	70.0-72.9
D+	67.0-69.9
D	63.0-66.9
D-	60.0-62.9
F	below 60

*The grade of "A+" *may* be given to students who achieve ≥97.0 plus exceptional attendance and participation.

Please note: Grades will be assigned according to the grading scale above (not curved). No revisions of poor work will be accepted. No extra credit assignment will be offered.

Exams:

Three exams will be given. Exams will cover topics presented in class; this includes information from lectures, class discussions, assigned readings, and other resources (e.g., animations). The general format will include a mixture of multiple-choice questions, naming structures, and short essay questions. To receive full credit, an answer must be comprehensible, thorough, and expressed using appropriate scientific terminology. Exams will be retained by the instructor; students will have 10-15 minutes to review their exams in class and may review them further during office hours.

Although exams are not cumulative, the material builds throughout the semester, so it is important to learn the introductory material. Background knowledge from prerequisite courses is expected, so that material should be reviewed as needed.

Assignments:

Each student should work toward the goal of earning 25 assignment points for the semester.

Assignments are intended to keep students engaged and learning the course material on a regular basis. There will be various types of assignments, including worksheets and discussion questions, and some require in-class participation. They will be completed at home as independent work and submitted at the start of class. It is important to bring TWO copies to class – one to submit and one to refer to and correct as we discuss the answers and then use for studying.

Each assignment will be worth a specific point value. More than 30 points will be offered throughout the semester, but the maximum that can be included in the course grade is 25 points. Students are strongly encouraged to complete every assignment, but it will be possible to earn 25 points even if an assignment is missed, depending on the quality of work.

For each assignment, you will be directed to use specific sources of information. You may always use the required and optional textbooks for this class and all course materials provided on Blackboard. If you would like to use additional references, you must ask first and then cite the source appropriately.

In this class, everything must be written in your own words. Using quotation marks is not allowed. Copying wording from the textbook, assigned readings, lecture slides, web sites, etc., is considered plagiarism. Please read my policy and the college policy on academic dishonesty and ask for clarification if needed.

CLASS POLICIES:

Class Attendance and Participation:

Class attendance is required. Documentation supporting the reason for your absence is not necessary unless you are requesting a makeup assessment. Any student who misses class is responsible for getting the information from a classmate.

Class participation is expected. Effective participation includes asking insightful questions during lecture, volunteering information that is pertinent to the lecture material, and answering the instructor's questions.

Please inform the instructor early in the semester of any pre-planned absences. For information on the state law regarding non-attendance because of religious beliefs, please see page 66 in the Undergraduate Bulletin (http://www.brooklyn.cuny.edu/web/off_registrar/2017-2018_Undergraduate_Bulletin.pdf).

Policy on Recording Lectures:

Recording class lectures is **prohibited.** You are expected to pay attention during class and take notes. If something is missed, you are encouraged to get the information from a classmate or ask the instructor. If you have a specific reason for wanting to record lectures, please discuss this with the instructor in advance and it will be considered.

Missed Exam:

Generally, makeup exams will not be given. If you believe that your situation warrants an exception, please provide documentation of your emergency as soon as possible and it will be considered.

Missed Assignments:

No makeup assignments will be given. If you are absent, please submit the assignment via email; as long as it is received by class time, it will be accepted. However, certain assignments require in-class discussion, so electronic submissions may not receive full credit. Late assignments cannot be accepted once we discuss the answers in class.

Blackboard:

You are required to check Blackboard regularly. Announcements will be updated frequently and may contain important information about due dates, assigned readings, etc… The course syllabus will be posted on Blackboard for easy retrieval. Lecture slides will be posted on Blackboard but not always before class. You are expected to take thorough notes during every class meeting.

Emails will be sent from Blackboard regularly. You must confirm that Blackboard has your current email address to avoid missing important information.

Communication:

Most questions should be asked at the start of class, immediately after class, or at office hours. If you need to meet individually, please email me with your availability so we can try to make arrangements. Emailing questions about the course material should be kept to a minimum; in-person discussions are strongly preferred.

When emailing any instructor, please remember that an email is a letter which requires certain guidelines:

1. Please remember to include your name at the end of your letter. It is very difficult to know who you are from your email address.
2. Your email should contain a subject that describes the content or purpose of the letter and the course number (i.e., HNSC 3210).
3. Please plan in advance and do not rely on immediate responses. I will try to answer questions promptly, but last-minute questions about assignments or exams may not be answered on time.
4. If you have a question about an assignment or which topics you will be tested on, you are expected to check Blackboard first to find the answer.

Academic Honesty:

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for policy implementation can be found at www.brooklyn.cuny.edu/bc/policies. If a faculty member suspects a violation of academic

integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member *must* report the violation.

In this class, academic dishonesty on an exam or assignment will result in a grade of "0" which will be included in your course grade and reported. Please pay close attention to my policy on assignments which requires students to write everything in their own words; using quotation marks is not allowed.

Demonstration of Professional Behavior:

Professional behavior is expected at all times. This includes:

1. attending class on time. If you arrive late, you should have all class materials in hand, quietly enter the room, and take a seat close to the door.
2. coming to class prepared. You should always bring your syllabus to class for reference and any readings that were assigned. It is not necessary to bring the textbook to class unless it is needed for a specific purpose and announced in advance.
3. keeping disruptions to a minimum. Except for the rare emergency, leaving class during the lecture is disruptive and unnecessary. Cell phones should not be seen by the instructor and should be turned off or set to silent mode; phone calls and texting are not permitted during class. **Frequent disruptions of any kind will result in a warning and afterward you will lose one-half course point for each additional disruption.**
4. communicating as a professional in your field. Show that you are capable of discussing the course material using appropriate terminology and proper pronunciation. Also, all written communication should contain proper grammar and proper spelling.
5. always communicating in a way that is respectful to your instructor and classmates. You may be asked to work collaboratively in small groups. You are expected to raise your hand before speaking.

Center for Student Disability Services:

In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at (718) 951-5538. If you have already registered with the Center for Student Disability Services, please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

Important Dates – Undergraduate Courses:

Friday, February 2	Last day to add a course
Monday, February 5	Last day to file for elective course Pass/Fail
Friday, February 16	Last day to drop a course without a grade
Tuesday, February 20	Conversion Day; Classes follow a Monday Schedule
Friday, April 6	Last day to resolve Fall 2017 and Winter 2018 incomplete grade (INC)
Wednesday, April 11	Conversion Day; Classes follow a Friday Schedule
Monday, April 16	Last day to withdraw from course with a W (non-penalty) grade

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Special Dates for HNSC 3210:

College is Closed	Monday, February 12th – Lincoln's Birthday
College is Closed	Monday, February 19th – President's Day
Monday Schedule	Tuesday, February 20th – Our class meets!!!
Exam #1	Monday, March 12th (subject to change)
No Classes	Monday, April 2nd – Spring Recess
Exam #2	Monday, April 23rd (subject to change)
Final Exam	Monday, May 21st, 6:00-8:00 p.m.

Tentative Assignment Schedule:

Each assignment is due at the start of the class on the date indicated. Please remember to bring TWO copies – one to submit and one to correct and use for studying. These due dates are subject to change.

- 2/20: DNA and Protein Synthesis
- 2/26: Protein Structure
- 3/19: Oxidative Phosphorylation Animations
- 3/26: DNP Case Studies
- 4/9: Glucose Oxidation Worksheet
- 5/7: Lipids Study Questions
- 5/14: Study Questions on Amino Acids and Integration

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TENTATIVE CLASS SCHEDULE

	Date	Topic	Readings & Resources
1	1/29	Course Introduction: Outline, Expectations, Resources Introduction to Metabolism	Syllabus Metabolic Pathways Chart
2	2/5	Review of the Cell DNA and Protein Synthesis - DNA structure - Genetic information - Gene expression	 Chapter 30-32 "Journey into DNA" Animations
MONDAY 2/12: COLLEGE CLOSED – LINCOLN'S BIRTHDAY			
MONDAY 2/19: COLLEGE CLOSED – PRESIDENT'S DAY			
3	TUES 2/20	Protein Structure and Function - Amino acid structures and properties - Protein folding and types of protein structure - Functions of proteins including membrane proteins and enzymes	Chapter 1-4
4	2/26	Enzymes - How enzymes work - Classification of enzymes - Factors affecting enzyme efficiency Transporters - Types of transporters - How transporters work	Chapter 5 Chapter 33 Animations
5	3/5	Digestion and Absorption - Mechanical vs. chemical digestion - Intestinal absorption - Carbohydrates - Proteins - Lipids - Micronutrients - Fiber	Chapter 7 Chapter 12 Chapter 19 Chapter 15

6	**3/12**	**<u>EXAM #1:</u> Introduction to Metabolism through Digestion and Absorption** - Date is subject to change	
7	3/19	Energy Transformation - ATP - Oxidative phosphorylation	Chapter 6 Animations
8	3/26	Carbohydrates	Chapter 7-12
MONDAY 4/2: NO CLASSES – SPRING RECESS			
9	4/9	Carbohydrates	Chapter 7-12
10	4/16	Regulation of metabolic pathways - Regulatory enzymes - Control of enzyme activity - Control of gene expression - Roles of vitamins and minerals Lipids	Chapter 5 Chapter 33 Animations Chapter 16-18
11	**4/23**	**<u>EXAM #2:</u> Energy Transformation through Regulation of Metabolic Pathways** - Date is subject to change	
12	4/30	Lipids	Chapter 16-18
13	5/7	Amino Acids - Metabolism - Urea cycle - Nitrogen transport	Chapter 19-21
14	5/14	Integration of Metabolic Pathways Genetic Disorders (if time permits)	Chapter 23-24 Video
15	**5/21**	**<u>FINAL EXAM (EXAM #3):</u> Lipids through Integration of Metabolism**	

<u>Note:</u> This is a tentative schedule. Topics may be added, deleted, or modified to enhance course objectives. Also, some topics might take more or less than the time allotted.