I. Basic Biochemistry 103.3, Spring 2020 Course Syllabus

Lecture Information

Lecturer: Dr. Laura E. Klein

Office: Remsen 100A

Office Hours: Wednesday, 12:30 – 1:30 pm
The lecturer may be emailed with questions and/or questions may be asked in the discussion thread of Blackboard.

E-mail: laura.klein@qc.cuny.edu

Lecture location/ time: Remsen 101/Wed and Fri, 10:45 – 12:00

II. Detailed Course Information

II.1 Course Description

This is the third of three required chemistry classes in the *Fitness, Nutrition and Exercise Science program* and provides an understanding of the structure and function of the major classes of cellular components involved in the processes used by the body in the processes involved in nutrition and energy utilization: amino acids and proteins, sugars and polysaccharides, lipids, including triacylglycerols and membrane lipids. Metabolism of nutrients will be covered, with emphasis on the metabolic breakdown of carbohydrates, fats, and proteins, and the generation of biologically usable forms of energy.

After completing the course, students will be able to:

- Describe the structures and properties of cell components, including amino acids, proteins, carbohydrates, and lipids.
- Understand the properties of water and the roles that interactions with water have on the physical and chemical properties of cell components.
- Explain the functions of enzymes, the mechanisms of enzymatic catalysis, interactions of enzymes with substrates and inhibitors, and the roles of coenzymes and vitamins.
- Describe how biological molecules are transported through the body and across lipid membranes.
- Analyze the metabolic pathways leading to the degradation of carbohydrates, fats, and proteins, and understand how metabolic reactions are coupled to the synthesis of ATP.
- Calculate the energy yields of nutrient degradation.
- Understand how metabolic pathways are regulated in response to energy needs, energy balance, and the cellular environment.

II.2 Textbook

Fundamentals of General, Organic, and Biological Chemistry, 8th edition, McMurry, Ballantine, However, and Peterson, Pearson

II.3 Attendance

It is important to note that there is a direct correlation between on-time class attendance and performance in all classes, including this one. All announcements and reminders about homework, quizzes, and examinations will be made in the first 10 minutes of lecture. If you were tardy or absent, it is your responsibility to obtain such information from your classmates after class.

You are required to attend all quizzes and exams. There are no makeup exams. You must obtain a doctor's note or provide other written documentation if you miss an exam due to sickness or any other circumstance. This note should be given to your instructor. Failure to do so will result in a zero on the exam.

Queens College policy states that, by registering in a course, you are assuming the obligation to fulfill the requirements set in the course by the instructor through this course syllabus. Although absence in-and-of itself shall not affect your grade, you are responsible for such activities as participation in class discussions, completion of assigned homework and practice quizzes, and the taking of examinations, any and all of which may constitute a component in the final grade of the course.

The CUNY Policy on Academic Integrity as adopted by the Board is available to all candidates. Academic Dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension, and expulsion. This policy and others related to candidates' issues are available to you at: http://qcpages.qc.cuny.edu/provost/Policies/index.html.

III. Grading

III.1 Scale

A+	96 – 100%	
A	88 – 95%	
B+	84 – 87%	
B	76 – 83%	
C+	72 – 75%	
C	64 – 71%	
C-	60 – 63%	Students in this bracket who pass the final exam with a grade of C or better will earn a grade of C, not a C- in this class.
D	50 – 59%	
F	< 50%	

Note that this grade scale is a 12-point scale and that it has only a single minus grade. The minus grades have been converted to the next higher grade. For example, the grade for someone who earns 88 – 92% is an A instead of an A-. The 12-point scale

accounts for the fact that there is NO CURVE in this course. There are opportunities for you to work on bonus homework questions to improve your grade, but no curve.

III.2 Determination of Grade

Section IV gives a detailed account of the assignments listed on Blackboard to help you keep track of your completion of these assignments. The lecturer has programmed Blackboard to give you and up-to-date course grade. This grade will be guaranteed to be accurate the week before the final drop date for the course and the week before each examination. At other times, it may be less accurate due to delays in grading and/or grade submission into Blackboard.

20%	Homework assignments	200 pts
10%	Attendance quizzes	100 pts
45%	Three in-class exams	450 pts
25%	Final exam	250 pts
100%		
10%	Bonus assignments	120 pts available

IV. Types of Assignments

IV.1 Homework problems — 15 pts each, total 120 pts

Two sets of online homework problems will be posted per section and must be completed by the listed due dates. These questions are learning objectives (based on the chapters in those lectures), and assessments (which will be available three days before the in-class examinations). Such assessments will correlate strongly with performance on the examinations. Thus, use these assessments to help determine what to review for the exams. Five (5) attempts will be allowed and the highest grade will be recorded

IV.2 Practice, quizzes — 20 pts each, total 80 pts

One online timed practice quiz will be posted per section and be completed by the listed due dates. You will be able to repeat each of these quizzes an unlimited number of times and choose to post the best result. Again, these practice quizzes will emphasize the major concepts in each section and provide you with information about your own misconceptions to correct prior to the in-class exam.

IV.3 Participation quiz — 100 pts

A single question from a given day's lecture will be asked, without being previously announced, in order to assess class participation. Each quiz is 4 pts with 25 quizzes.

IV.4 Online Exams, including the final — 700 pts

As a result of Covid-19, there will be, in addition to the first, in class exam, two online multiple choice exams during the semester (150 pts each) and a comprehensive final exam (250 pts) that will be posted on BlackBoard. They will be designed to be 60

minutes in length and given during normal class hours on the days listed on the syllabus. The examination will be set up to start at 10:45 am on a Wednesday. The test will have to be for exactly 1 hour and be done one question at a time, rather than full pages being made available (so as to prevent photograph and sharing of whole test pages). I will set it up to allow you to go back to previous questions to revise your answers. You are not supposed to use textbooks, notes or the internet, and I will try to make the questions ones that require you to read carefully and think through your answers. The exams will begin at the designated time, and you may submit them when you are ready if you complete them early. At the designated finish time, the work you have done so far will be automatically submitted. There will be responses available to your incorrectly answered questions.

V. Tentative Schedules

V.1 Exams,

Exam 1: February 26	**Chapters 10, 18, 19, 21**
Exam 2: April 7	**Chapters 20, 22, 23**
Exam 3: May 13	**Chapters 24, 25, 28**
Final Exam: May 20	**Comprehensive**

V.2 Course schedule:

Topic	Chapter(s)	Dates
1. pH and protein function	10,18	1/29, 1/31
2. Amino acids and proteins	18	2/05, 2/07
3. Enzymes and vitamins	19	2/14
4. Generation of biochemical energy	21	2/19, 2/21
5. Carbohydrates	20	2/28, 3/04, 3/06
6. Carbohydrate metabolism	22	3/11, 3/20
7. Intro to Lipids	23	3/25
8. Lipid groups/structures	23	4/3
9. Lipid metabolism	24	4/15, 4/17, 4/22
10. Protein and amino acid metabolism	25	4/24, 4/29, 5/1
11. Chemical messengers	28	5/6, 5/8
Review for comprehensive exam		5/15

VI. Course Pedagogy

VI.1 Pedagogic approach

You should aim for mastery (understanding, learning), not memorization. You cannot master most of chemistry by just reading the book (or, more commonly, just glancing through the book or reading through the problems). You will only master topics in chemistry by reading for understanding and testing that understanding daily. The material in chemistry—and, in truth, all the sciences—is mastered by attempting to answer questions, failing to choose the right answer or solve the problem, and then reviewing the concepts for deeper understanding, and trying again. Plan to make mistakes and learn from them; it's a fundamental part of the learning process. Not giving up when the going gets rough is called *grit*, and having grit is the hallmark of all highly successful people. Another such hallmark is the ability to acknowledge when you need help. If you work HARD to understand a concept, reread the text, search for additional sources with explanations that may be differently worded and you STILL cannot reason through the problem, ask the lecturer for help. This is why office hours exist—USE THEM!

VI.2 Habits for success

How do you learn instead of memorizing? The answer is to develop what the lecturer calls *habits for success*, which have been gleaned by personal experience and watching the successful students in biochemistry and other classes. Developing these habits will improve your performance in ALL classes, not just this one.

1 – Come to class prepared and do your homework!

Though this may be a disappointing answer, the fact is that the students with the highest attendance in the lecture and the highest grades on the homework (without cheating by having someone else do it) have the highest grades at the end of the semester. These students tend to read the textbook before coming to lecture, examining the illustrations and reading the captions for understanding, trying to answer the questions along the way and making note of what they find difficult to understand, and they tend to ask and/or answer questions during the lecture. Ask questions from your preparatory studies during class. It is certain that you are not the only one that was confused by a given concept!

2 – Do not lie to yourself!

Do not tell yourself that a low grade will improve if you just keep doing what you are currently doing. This is a psychological defense mechanism that makes you feel better in the short term but does nothing to address the problem. It even has a name – *magical thinking.* A low grade indicates that you are not doing ALL that you should be doing. Come and talk to the lecturer during office hours to discuss different approaches to achieve mastery. Magical thinking just gets in your way and prevents you from making the changes in your study habits that will lead to learning, even as it temporarily protects your pride and self-esteem by giving you false hope. Also, do not assume that because you understood the reasoning leading to the correct answer when an instructor, a friend or a tutor chose the answer that this implies that YOU have the understanding to work through that problem. You must practice and obtain the correct answers on your own in order to perform well on the examinations.

3 – Do not make excuses!

Do not allow yourself to say *"I did poorly because…" or "I did not do this assignment because…"* All people have things that intrude and make accomplishing tasks difficult. It can be very difficult to motivate yourself when you feel overwhelmed with everything that must be done in a given day. When this occurs, it can be so very tempting to put off the things you hate or struggle with, and these things tend to include hard class work. Do not fall into this trap! There is always time to complete your college assignments unless you have overloaded your schedule. If you are struggling to find the time, look at your much time do you spend on your phone? on social media? etc. (Getting into this habit as a college student will really help you when you have a career!) Note: If you are truly having a problem with motivation and/or doing everyday tasks, this can be a sign that you may need professional help. Queens College provides counselors that can help you. The instructor can provide information on this service.

4 – Do not judge yourself by your friends!

Everybody learns a given subject at a different rate because every person has different interests and intellectual strengths and weaknesses. Do not feel bad or panic if you are spending more time on homework or reading than your friends or classmates. This does not mean that you cannot do as well in the course; it just means that it takes you more time to really understand a concept. As you keep working, you will get faster and may develop a deeper and more profound understanding of the subject.

5 – Do not spend all your time on a particular problem or concept—either during your studies or on exams!

If you are struggling on a particular topic in homework or a problem on the exam, move on to something else and then come back. Your brain will still be subconsciously working on the problem while you do other things (maybe other homework or other exam problems or cleaning house.) When you do come back to the problem, you may find that you see how to reason your way through it instantly! This is especially true on exams, when you are already nervous.

6 – Show grit. Do not give up!

Most students give up on a problem or concept when they become frustrated, usually because not being able to figure out a problem makes them feel sad or stupid or bad or (put whatever bad adjective you want here). However, feelings are fleeting, and frustration is a good thing! Frustration indicates that you are close to mastery. Thus, when you feel like quitting, take a deep breath or several – which will act to remove the judgement that defines the feeling as bad – then refocus on the problem. However, temper this with the advice given in 2 and 5.

7 – TURN OFF YOUR CELL PHONE AND IGNORE YOUR SOCIAL ACCOUNTS!

When you are focusing on learning and struggling with new concepts (and most of your time should be spent on this), turn off your cell phone and electronic gadgets. If you are working on online homework, resist the temptation to go check your Facebook, or your e-mail or your twitter, or … These allow you to disengage from that feeling of tension (frustration) – along with the learning that accompanies it. Therefore, these activities interfere with the learning/mastery process! Once you know something, they can be useful tools. However, they are awful when attempting to learn something, as they are merely distractions and time eaters.

8 – Go to office hours!

Office hours are a time to talk to the lecturer about any problems you are having in the course. You may also talk about personal problems. But do remember that we are not trained psychologists and, therefore, cannot help you with these as readily as we can help with information about the topics we are teaching, in this case, biochemistry. However, if you are having trouble understanding a concept or process or problem or trouble balancing work/course load, the instructor can offer advice if you choose to ask. Don't hesitate to attend office hours.

V.3 Study groups

The instructor recommends that you attend or develop a study group if and only if you follow some rules established by the most successful study groups observed. These successful groups competed in a friendly manner and, therefore, pushed each other to excel. They also never allowed each other to make excuses. Almost all these students maintained A averages throughout their time a Queens College, and most are now in medical, pharmacy or dental school. In questioning these students to determine how the group was run, the instructor was told the following:

a. All members of the group were expected to study on their own and, while doing so, to prepare a summary of their notes along with questions that arose during the review of notes. These questions would be addressed when the group met, which was usually once per week. (The week before exam weeks, the group would meet daily.)

b. All members of the group were expected to show up at the group meting with the prepared summary and questions. Failure to do so resulted in the person being asked to leave the group. This person was not included in subsequent group meetings. (In other words, if a person would not do the work, then they were out of the group. The lecturer was told bluntly by several members of this group that it was not a group for slackers!)

c. All members of the group were expected to participate actively in answering the questions that they posed as well as questions posed by other students. If a member was not active in the discussion, then this person was asked to leave the group and was not included in subsequent group meetings.

Such a study group structure may seem regimented and certainly requires a significant amount of maturity in the elected group leader, since it is the group leader that determines the members of the group and where they meet. However, if you develop or participate in

such a study group, you will find that your overall master of the material increases because you are actively engaging the material every day. You will also find that the group will remain intact for more than a single science course and will continue to provide help throughout your Queens College career. If you have read this far, obtain bonus points by sending an e-mail notifying the lecturer of that fact within a week of the posting of this syllabus.

VII. Last Requests

The list below are common questions that are asked during the last few weeks of the semester or at the end of the semester, when it is usually far, far too late!

- **Will there be a curve?**

No. Bonus assignments have been provided.

- **Is there anything that I can do to get additional points?**

Yes, Bonus assignments have been provided. However, attempting to complete these during the last week of class will not maximize the points that you can receive from these assignments.

- **Is there anything you can do to *help* me?**

It is impossible to help anybody in the last week of class or the day before an exam! However, if you ask this question during the first few weeks of class or if you are asking questions during the class, the answer is YES. Please see the instructor during office hours if you are struggling and ask questions during and after the lectures.

- **Can you extend the homework/bonus due dates so that we can complete the homework/bonus and get the remaining available points?**

We should note that this is a very common question and it completely misses the pedagogical point of the homework and the bonus. Homework is not bonus. The bonus is there to increase the number of problems that you work. The due dates are designed to make you review and challenge your understanding before in-class exams and, as such, are a very good way to prepare for the exams.

- **Can I drop a course?**

There is a final day to drop the course and this is given in the course calendar. All assignments will be graded and posted in Blackboard so that you know your course grade at least three days prior to this date. Thus, it is your responsibility to make an educated choice before the official drop date. Under extreme circumstances, you may be allowed to withdraw late from a course. This is an evaluated withdrawal (WP or WF) and must be requested from the Undergraduate Scholastic Standards Committee, not from the instructor, although the instructor will have to sign the documents.

Note that on-time attendance and submission of completed homework tends to directly correlate with performance in the course. If you are not completing your homework or not attending class, and you are failing, then you probably should withdraw from the course before the final date. If you cannot withdraw because of financial aid requirements, consider the Pass/No credit option which must also be requested by a specific date indicated on the course calendar.

- **Is there anyway I can pass this course?**

Usually, if you are asking this question in the last week of class, the answer is No. However, since Blackboard is coded to give your course grade and will be updated weekly, you will know your course standing. There is no curve, so what you see is what you get. The instructor would much rather you drop this course than fail, since this course is important for this program. Thus, please do not indulge in magical thinking. If you are not doing the homework and failing or making Cs on the exams, then you will not pass this course.

- **I am earning a D in the course. Is there any way that you can give me an F?**

No. You will receive the grade that you earned. An F is NOT replaced on your transcript and, therefore, will be calculated into your GPA for any post-graduate program considerations. The F is only replaced in the calculation of the Queens College GPA.

- **Is there any way you can just change my grade?**

No. Our responsibility as a faculty is (I) to setup conditions that make it conducive for you to master the required material in a course, (ii) to ensure that you know these conditions via the course syllabus, and (iii) to treat every student in the course exactly in the same way in terms of grading and types of required assignments. In terms of grades, we are essentially accountants, as the grades result from you meeting the condition of demonstrating master of the required material.

In other words, we do not give a grade. Instead, a grade is earned based on your work in the course in comparison to the conditions as stated on this syllabus. Any changes made to the syllabus will be announced in the class at the start of the class and will be posted in Blackboard as an amendment to the syllabus. Thus, if everybody does the work and earns an A, the instructor will not “CURVE” down, However, if everybody does not do the work in this syllabus and earns an F, the instructor will also not “Curve” up. The class is what you see on this syllabus and WYSIWYG.

- **Is there anybody else who can change my grade?**

If you feel that you have been treated unfairly in ANY course, you may appeal your grade (Please note that – by college definition on Nov 7, 2013 – unfairly in this context implies that you have been treated in an arbitrary and capricious manner by the instructor and that you can demonstrate that the grade you received was assigned punitively, unfairly or on a basis other than impartial academic evaluation based on the course syllabus.)

The first step in appealing your grade is to consult with the instructor. The instructor must provide you with a clear explanation of how the assigned grade was determined and consider your arguments in support of a different grade. This can be done through a single e-mail. If no satisfactory resolution can be reached, you then may raise the issue with the department Chair (or designee) through an informal meeting or e-mail. The Chair will then make a non-binding recommendation to the instructor. After receiving the Chair's recommendation, the instructor will inform you in writing of the decision (which may not be the same as the recommendation from the chair).

If you are not satisfied with the decision, you may submit a formal, typed appeal to the department Chair and the divisional dean within 30 days of receiving the formal decision from the instructor, which was made after the informal meeting with the Chair. The Chair and Dean will only consider your formal appeal if you are alleging that the assigned grade is inconsistent with the instructor's stated grading policy or inconsistent with the grading calculation for other students in the class. You may not appeal the instructor's judgement. This formal appeal must include copies of all work and supporting documentation on which the appeal is based. The Chair will review your formal appeal and the instructor's calculation of the assigned grade as expeditiously as is practicable. If the Chair finds the grade to be consistent with the instructor's stated grading policy and consistent with the grading calculations of other students in the class, your appeal will be denied. If the Chair finds otherwise, s/he will make a non-binding recommendation to the instructor. (It is important to note here that the Chair does not have the authority to change the assigned grade.) In the event that the instructor does not accept the Chair's recommendation to change the grade, or you chose to appeal the Chair's findings, or the Dean determines that it is necessary to expedite the appeal process, the Dean will – at the earliest opportunity – appoint a three person faculty committee from the department to review all relevant evidence and make whatever grade determination the committee deems appropriate. The committee must notify the student, the instructor, the Chair and the Dean of its' decision and its' reasoning within 30 days of its' formation. Only if a majority of the faculty committee finds that the assigned grade is improper may the Chair then submit a Report of Change of Grade to the Undergraduate Scholastic Standards Committee, who will then direct the Registrar to change the grade as indicated on the form. Decisions of the faculty committee are final and may not be appealed. Students may appeal directly to the Undergraduate Scholastic Standards Committee only if the above procedures have not been adequately followed.

Adapted from syllabus of Dr. Cherice Evans.