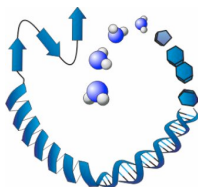


## BIOL/CHEM 328: Biochemistry II Spring Semester, 2015 Syllabus



*Note: A separate syllabus will be provided for the laboratory portion of this course, so the details in this syllabus refer only to the lecture component.*

**Instructor:** Dr. Diane Husic

**Email:** [dhusic@moravian.edu](mailto:dhusic@moravian.edu)

**Office:** 311 Collier Hall of Science

**Office hours:**

Mondays	10:15 – 11:15 am
Wednesdays	10:15 – 11:15 am 4:30 – 5:30 pm
Thursdays	10:15 – 11:15 am

*\* I can meet with you at other times, but please schedule these appointments with me ahead of time.*

**Class Times:**

Lecture:	MWF 8:55 – 10:05 am in 210 Collier
Lab:	Monday @ 1:15 - 4:15 pm in 301 Collier HOS OR Thursday @ 12:45 – 3:45 pm in 301 Collier HOS

**Course Prerequisites:** BIOL/CHEM 327 (Biochemistry I); and therefore also CHEM 212  
OR permission of instructor

**Course text:** Lehninger Principles of Biochemistry, 6<sup>th</sup> ed., (D.L. Nelson and M.M. Cox) W. H. Freeman & Co. (NY, 2013)

**Course “support”:** There is a Blackboard shell for this course; please check this site for announcements and updated postings on a regular basis

Website associated with textbook:  
[http://bcs.whfreeman.com/lehninger6e/#t\\_824263](http://bcs.whfreeman.com/lehninger6e/#t_824263)



**Course objectives/introductory comments:** This course is designed to expand a student's background and understanding of the discipline of biochemistry, building on the concepts from Biochemistry I (BIOL327/CHEM327). A variety of advanced topics will be discussed including:



Examples of key metabolic pathways and strategies



Integration and regulation of metabolism at both the organism and cellular levels



Lipids, membrane structure and transport mechanisms



Mechanisms of catalysis and design of active sites of enzymes/enzyme kinetics



Bioenergetics



Signal transduction and the hormonal control of cellular metabolism and gene expression



Aberrations in gene expression/cellular signaling in human disease



Introduction to the biochemistry of disease (e.g. cancer, diabetes, atherosclerosis, obesity, HIV/AIDS, etc.)

As time permits, I will try to incorporate discussions of topics that are currently "hot" in the field of biochemistry, relevant issues that appear in the media during the semester, and/or topics which are of particular interest to students enrolled in the course.

### Learning Goals:



Students will understand key biochemical principles related to metabolism, catalysis, energetics and regulation. There are layers of complexity in biochemistry, especially in regulation.



Students should gain an appreciation for biochemistry at the "micro-level" (molecular level) as well as how the molecular reactions and regulations enable "macro-level" processes (physiology at the cell and organism level).



Students should understand how aberrations in a biochemical molecule or process can have major consequences for cellular function and the overall health and wellbeing of an organism.



Students should be able to search the biochemistry literature, read primary manuscripts, and review articles critically.



Students should be able to articulate a research question and develop a research proposal that includes a literature review, clearly articulated specific aims, and proposed experiments that address the questions being asked.

Approximately weekly, I will prepare a detailed lecture outline that will be posted on

BlackBoard and will include a list of required and recommended readings from the text, journals or books in the library collection, or articles that can be found via the internet. In addition, I will list suggested study problems from the text. ***Please note that I will occasionally update this outline during the week, and I use Blackboard to post announcements to the class (or send them through email), so you should get into the habit of checking this course resource and your Moravian email account on a regular basis.***

Since this is an upper-level course, I have high expectations for each of you. Much of the material discussed goes beyond the scope of a textbook, and exams will certainly involve more than simple memorization and "regurgitation" of the material discussed in lecture. A large amount of material will be covered in this course; biochemistry has never been considered an easy subject! I will expect you to understand concepts and be able to relate them to new situations. You will also use the background material from class as a basis for interpretation and critique of current journal articles. It is my hope that this course will serve as a bridge between a classical undergraduate science course and the field of biochemistry in the "real world" of the research laboratory in industry or academe. Thus, I include readings from journals, the writing of a grant proposal, and other assignments and test questions that are designed to inspire critical scientific thinking and evaluation.



### **Biochemistry Course "Survival Techniques"**

1. *Make use of the lecture outlines to keep on track.* As noted above, I will provide an outline of topics covered in lecture each week. These outlines also include a listing of corresponding pages from the text to be read and suggested study problems.
2. *Come to class.* In an upper level course like this, I typically don't have attendance problems. I don't formally take attendance everyday, but this is a small group and I do know who shows up both physically and mentally! I don't lecture straight out of the text. I have been known to give *impromptu* in-class assignments due at the end of the class period; these can significantly benefit those who do show up to class.
3. *Read assigned material before coming to class.* This helps to facilitate discussions, allows you to better follow material covered in lectures and puts you in a better position to ask good questions during class.
4. *Work on the study problems listed in the lecture outlines.* I select questions from the text or elsewhere that are designed to help reinforce concepts presented in the lecture and readings. I do not routinely collect or grade these; they are, instead, are for "practice". **Don't** wait to work on these problems until right before the exam. You need to ensure that you understand the concepts as we are covering them since the topics in this course tend to build on one another.
5. *Get help.* If you get stuck on a problem, or don't understand something from lecture, come to see me in a timely fashion. I have consistently observed that those students who come to my office

with questions on a regular basis do the best in this course. Besides taking advantage of my office hours, feel free to contact me via e-mail with questions that arise as you are studying or working on practice problems. There are also numerous internet resources that can serve as tutorials or provide additional information on any course topic that might intrigue you.

6. *In general -- continue to refine and use good study habits.* Students who wait until the last minute to read the text, review the lecture notes, or study for an exam will quickly realize that the amount of material can be overwhelming. You should expect to **study a minimum of 6 hours per week for this course.** As noted above, **reading the assigned material prior** to attending the lectures is useful. **IN OTHER WORDS, COME TO CLASS PREPARED AND DON'T PROCRASTINATE IN YOUR STUDIES!**



**Attendance:** Students are expected to attend class and actively participate. In circumstances when students must miss lecture (see lab syllabus for attendance policy for that part of the course) for an official college function, please let me know ahead of time so we can make arrangements in advance. In the case of illness, please contact me as soon as you are able to and we will discuss options for dealing with missed material and work.

**Academic Integrity:** In my opinion, academic integrity is of utmost importance and cheating will not be tolerated. Students are responsible for adhering to the College's policy on academic honesty; Moravian College expects its students to perform their academic work honestly and fairly. A Moravian student, moreover, should neither hinder nor unfairly assist the efforts of other students to complete their work successfully. This policy of academic integrity is the foundation on which learning at Moravian is built. Students will be held to the highest standards as specified by the Moravian College Honor Code. Violations of this code will be handled in the most severe manner allowed by college policy. Please read the **Academic Honesty Policy** that is included in the student handbook *and* the Guidelines for Honesty included in this syllabus. If you have any questions about plagiarism or other forms of academic dishonesty, please ask.

- All work that you submit or present as part of course assignments or requirements must be your original work. This includes any work presented, be it in written, oral, or electronic form. When you use the specific thoughts, ideas, writings, or expressions of another person, you must accompany each instance of use with some form of attribution to the source. Direct quotes from any source (including the Internet) must be placed in quotation marks (or otherwise marked appropriately) and accompanied by proper citation. However, a paper should not be a string of quotes or ideas of others. Student ignorance of bibliographic convention and citation procedures is not a valid excuse for having committed plagiarism.
- You may not use writing or research that is obtained from a "paper service" or that is purchased from any person or entity.
- You may not use writing or research obtained from any other student previously or currently enrolled at Moravian or elsewhere or from the files of any student organization, such as fraternity or sorority files.

- You may not collaborate during an in-class examination and you may not work with others on out-of-class assignments or projects unless expressly allowed or instructed to do so by me. If you have any reservations about your role in working on any out-of-class assignments, please consult with me.
- Cheating or plagiarism will not be tolerated and may result in failure of the course. A major form of academic dishonesty is plagiarism, which we define as the use, whether deliberate or not, of any outside source without proper acknowledgment; an “outside source” is defined as any work (published or unpublished), composed, written, or created by any person other than the student who submitted the work (adapted from Napolitano vs. Princeton). Assignments in this class will involve the use of internet resources, and it is my experience that students often do not realize that copyright violations and plagiarism policies still apply when using materials from these resources.
- At Moravian, if an instructor suspects that plagiarism has occurred, the student will be asked to show the notes and drafts contributing to the final version of a paper or assignment. The instructor also has the right to review any books or periodicals that were used. The grade for the paper will be suspended until these materials have been reviewed. An instructor who suspects a student of violating the policy on academic honesty with regard to an assignment, requirement, examination, test, or quiz will consult with another faculty member in the department using a blind copy of the work in question, to verify the violation. If the charge is verified, the instructor will, in almost all cases, assign either a grade of zero to the academic work in question or a failing grade in the course in which the violation occurred. The student must be informed in writing of the alleged violation and penalty; a copy of this memo must be sent to the Associate Dean of Academic Affairs.
- A student may appeal either a charge of academic dishonesty or a penalty as follows:
  - First, to the course instructor.
  - Next, to the Academic Standards Committee

Please review the read the Academic Honesty Policy that I distribute and sign and return the cover page.

**Special Accommodations:** Students who wish to request accommodations in this class for a disability must contact Ms. Elaine Mara, Assistant Director of Academic and Disability Support, located on the first level of Monocacy Hall, or by calling [610-861-1401](tel:610-861-1401). Accommodations cannot be provided until authorization is received from the Academic Support Center.



### ***Tests/Assignments/Grading:***

I do look at trends in grades over the semester; improvement in test grades over the duration of the course will be favorably noticed! **Active** participation in class discussions, review periods, etc. is expected and will be a factor in the determination of final grades.

***The lecture portion of the course will count as 75% of your total course grade. The lecture grade will be determined as follows:***

	<u>% of final grade</u>
Tests <sup>1</sup>	60
Assignments and Class Participation <sup>2</sup>	20
Grant Proposal <sup>3</sup>	20
	<hr/>
	100 %

<sup>1</sup>**Tests:** Tests will be based on lecture material and assigned readings from both the text and journal articles. **No make-up exams** will be administered without an official medical or registrar's excuse.

### **Tentative test dates:**

Test #1 (20% of grade):	Friday, February 20 <sup>th</sup>
Test #2 (20% of grade):	Wednesday, April 1 <sup>st</sup>
Test #3 (20% of grade):	During finals weeks (Monday, May 4 <sup>th</sup> , 1:30 pm)

<sup>2</sup>**Assignments:** Assignments will be given to encourage you to keep up with the course material. Many of the assignments will involve the use of research articles from primary journals and/or the internet or involve group work. I expect each of you to actively participate in class discussions and to complete all assignments in a timely and professional manner. There will be no make-ups for assignments and **late work will not be accepted.**

<sup>3</sup> **Grant Proposal:** Each person enrolled in this course will be expected to write a research grant proposal. This is not a typical literature search type of term paper; rather, you will be expected to read up on a biochemical topic of personal interest and then propose experiments to address new, unanswered questions related to the topic. Development of project proposals and grant writing are an integral part of working in biochemistry and related fields, and the funding of such proposals by granting agencies is crucial for the continuation of research (and, often your job). Please start thinking about this assignment early in the semester.

Proposals will be graded on the basis of four main criteria:

**1. Scientific content:**

- Are the questions being asked logical and thought provoking?
- Would the proposed experiments answer the questions being asked?
- Is the proposal written at a level expected from a student in a 400-500 level biochemistry course?

**2. Justifications for the proposed study:**

- Has the project been well thought-out?
- Are the justifications logical and convincing to the reader? (i.e. Have you convinced me why I should fund your project over that of J. Doe, Ph.D.?!)

**3. Format of the proposal:**

- Is the style, grammar, level of "professionalism", etc. appropriate for a scientific grant proposal?
- Are all components of a typical grant proposal included?
- Have primary references been used and properly cited?

**4. Creativity/Originality of proposal:**

- Have original, unanswered questions been asked?
- What extent of effort was put into this assignment?
- Is the proposal just a rehashing of material found in articles or other sources? (It better not be - this would be a form of plagiarism.)

I have a collection of materials regarding grant writing that I will provide later in the semester. I also have some samples of previous students' proposals on file. I prefer that each of you select your own topic, based on a personal interest, rather than coming to me for an idea. However, I do want to approval all topics before you actually start writing the grant.

To keep everyone on tract on this grant project, I have listed a series of deadlines. There will be **no extensions** for these due dates.

Topic decision date:

**Monday, February 16<sup>th</sup>**

An abstract describing the proposal topic:

**Monday, March 2<sup>nd</sup>**

An outline and beginning bibliography (at least 3 primary references)

**Friday, March 20<sup>th</sup>**

Proposal due:

**Wednesday, April 22<sup>nd</sup> by noon**

*(If you would like me to review a draft of your proposal, I would need to have it by **April 10<sup>th</sup>** in order to get it back to you in time for you to make revisions.)*

Proposal presentations (oral) to class "review panel":

***To be presented in class the last week of the semester***