

Foundations of Biochemistry | BCH 2020 | U01 | Fall 2018



General Information

Instructor: Dr. Saldana

Class Meeting Time: MWF 9:00am - 9:50am

Class Location: Green Library (GL) Room 132

Office: OE 210

Email: [Canvas](#) (preferred), asaldana@fiu.edu (alternate)

Office Hours: M 10:30am - 12:30pm, Thu 11:00am - 1:00pm, Fri 10:30am - 12:30pm, or by appointment



Course Description & Learning Outcomes

Welcome to Foundations of Biochemistry. This is an introduction to the fundamental concepts of biochemistry, and is designed to present these concepts to students who may not have a background in organic chemistry. The material you will learn in this course will serve as a starting point for understanding the chemistry of biological systems. Upon completing this course, you will be able to:

- Describe the factors that determine the structures of biological molecules, and how molecular structure relates to the functions of these macromolecules.
- Explain the principles that govern the interactions of macromolecules with their environment and with each other.
- Identify the factors that affect the catalytic activity of enzymes and describe how and why enzymes are regulated.
- Explain how cells extract energy from macromolecules and how the balance between catabolic and anabolic pathways is maintained.
- Describe how metabolic pathways are affected by, and adapt to, changing physiological conditions, including diet, exercise, and disease.
- Apply biochemical concepts to real-world questions in other fields, including medicine and biotechnology.



Prerequisites

You are expected to have completed and passed:

- General Biology 1 (BSC 2010)
- General Chemistry 1 (CHM 1045)

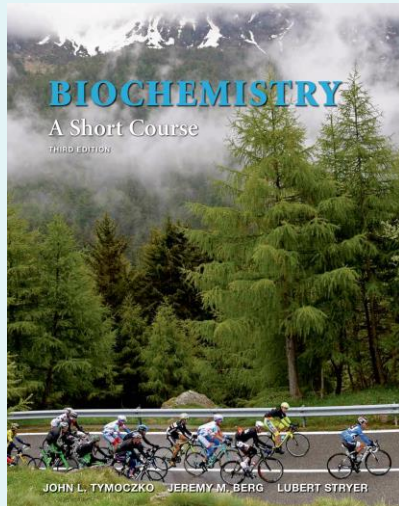
Knowledge from these courses will be assumed.



Course Materials

Required Textbook

Tymoczko, J. L., Berg, J.M. & Stryer, L. (2015). *Biochemistry A Short Course, 3rd edition*. W. H. Freeman & Company: Macmillan Education. ISBN: 9781464126130 **(Required)**



Other Resources

Makemsom, J. 2018. Biochemistry Learning Manual (See Module 1 in Canvas)

Timberlake, K.C. 2016. General, Organic, and Biological Chemistry (**GBOC**), 5th ed. Pearson Education, Inc. ISBN: 9780321967466. **Library Reserve.**

Timberlake, K.C. 2009. Chemistry: An Introduction to General, Organic, and Biological Chemistry (**Intro GBOC**), 10th ed. Pearson Education, Inc. ISBN: 9780136019701. **Library Reserve.**

iClicker

You may purchase an iClicker device at the FIU Bookstore. You may also use the mobile REEF polling application (with an active registration) on your smartphone. We will be using the iClicker Cloud application for this course; however, you may still use the traditional iClicker remote. For information on how to register your iClicker remote, click [here](#). Please make sure to include your Panther ID in your registration.



How will you succeed?

Come to class prepared. You can do this in one of two ways: (a) read the assigned pages (this is the best way to prepare), or (b) review the figures and read figure legends prior to coming to class. Doing this will help you remember and understand the material much better than attending the lecture with a blank slate.

Go over your notes after class. Reviewing your notes right after class will help you retain the information. It will also make you aware of important points you may have missed or are confused about, and allow me the opportunity to help you with sufficient time.

Communicate. If you are not doing as well as you would like, **please seek help early on in the semester.** If you wait until the end of the semester to email me about your grade, there is little, if anything, I can do to help you then.



Attendance

You are expected to attend class regularly, to arrive on time, and to remain in class until the end of the period. In order to get the most out of this class, it is imperative that you attend and take good notes. Doing so will help you master the material, and serve as a guide when preparing for exams. You are responsible for all material covered in class, as exams will include material not directly addressed in your textbook. Additionally, although attendance is not a graded component, there will be iClicker questions, quizzes and assignments for which you need to be present in class.



Canvas

All lecture notes, reading materials, and scores for assignments/exams will be posted to Canvas. Canvas will also be used to communicate any changes to the class schedule; however, you will also be notified of any changes during class. If you are new to Canvas, please take some time to familiarize yourself with the interface.

For more information on how to use Canvas, please visit:

</courses/2629/pages/canvas-student-overview>

If you encounter any technical difficulties, please contact **FIU LMS Support Services**

(<http://lmshelp.fiu.edu/>)



Grading Policy

Grading Scale

Letter	Range %
A	100% - 90%
B	<90% - 80%
C	<80% - 70%
D	<70% - 60%
F	<60%

Final grades will be assigned according to the scale indicated above and will not be rounded-up. Please do not ask whether you can get a grade bump, grade bumps are unfair to other students, so the answer to that question is emphatically NO. Finally, please do not ask whether you can turn in extra credit to increase your grade. Extra credit opportunities are outlined under the assignments section, and will be equally provided to all students. You will be assigned the grade you earned for the course as per the scale specified above.

Grade Breakdown:

Five Unit Exams @ 10% Each	50%
Cumulative Final Exam	15%
Clicker Questions	15%
Ten Quizzes @ 1% Each	10%
Five Review Activities @ 2% Each	10%
TOTAL	100%



Exams, Assignments & Make-ups

Exams: There will be 5 unit exams during the semester as well as a cumulative final exam. Although each of the first 5 exams will not be cumulative in nature, you may be asked to synthesize material learned in previous units. The exams will cover the class lectures as well as the assigned readings from the textbook. Each unit exam will count toward 10% of your final grade. The final exam will count toward 15% of your final grade. We do not drop any exam score in this course.

Exams will consist of a variety of questions (T/F, fill-in the blank, multiple choice, short answer). Please be prepared to provide either your Panther ID card or a Florida driver's license on the day of the exam. If for any reason exam dates or the material covered in an exam have to be adjusted, you will be given at least one week's notice in class and via Canvas.

Make-ups: *If you are unable to take an exam because of an emergency, you will be given a make-up exam as long as you are able to provide valid documentation (please see below for descriptions of what constitutes an emergency and the forms of accepted documentation). Please note that the make-up exam may not be in the same format as the exam given during class. Although there may be circumstances that may prevent you from giving prior notification for missing the final exam, you must email me within 48 hours of the missed exam **with the reason and appropriate documentation**, so that proper accommodations can be made.*

Weekly Quizzes: There will be 10 quizzes throughout the semester. Each quiz will be worth 1% of your final grade (10% total). The material that will be covered in each quiz is listed on the course schedule. The purpose of the quizzes is to help you stay on top of the reading and to give you an idea of the types of questions you can expect to see on the exams.

Make-ups: *If you miss a quiz as a result of an emergency, you will be given a make-up as long as you are able to provide valid documentation. You must email me within 48 hours of the missed quiz. (please see below for descriptions of what constitutes an emergency and the forms of accepted documentation).*

Review Activities: Review activities are meant to help you prepare for the exams. I will present you with problems which you will discuss and answer with your group (2-3 students). At least one group member will need to bring an internet-enabled electronic device (preferably a laptop) since the assignment will be collected electronically (as a Canvas submission). Although these activities will be open-book, studying the pertinent chapters and lecture notes prior to class will greatly increase your chances of doing well. There will be 5 review activities throughout the semester and each one will count toward 2% of your final grade (For a total of 10%). **Please note: if you arrive more than 10 minutes late on the day of a review activity, you will need to work on it individually.**

Make-ups: *If you are unable to make it to class for a review activity because of an emergency, you will be given a make-up as long as you are able to provide valid documentation. You must email me within 48 hours of the missed exercise. (please see below for descriptions of what constitutes an emergency and the forms of accepted documentation).*

iClicker Questions: There will be a series of clicker questions throughout each lecture. These questions are designed to test your comprehension of the material, and better prepare you for exams. For these questions, you will be allowed to discuss the answers with your classmates before making your selections. You will receive 1 point for each correct answer and 0.5 points for incorrect answers. Clicker questions will count toward 8% of your final grade. Although we will have clicker questions during 29 lectures (not including the first week), I will only count your best 25 days toward your final grade, so this component of your grade is relatively simple to earn if you show up to class and participate.

You will have one week to purchase and register your clicker device. We will be using iClicker Cloud in this course; however, you can still use a traditional iClicker remote. For information on how to register your iClicker remote click [here](#). You may also use the Reef Polling App; however, this will require you to pay a subscription fee if you have not already subscribed to use the app (there is a 2-week free trial period). Please verify at the end of the first week that your clicker scores are visible to you in the Canvas "Grade Center." Although we will have clicker questions during the first week of class, these are meant to make sure that your iClicker is working and to give you an idea of the types of questions you will see throughout the semester; consequently, these will not count toward your grade. **Clicker questions that will count toward your grade will begin on Tuesday, August 28th. Make sure you register your iClicker before then.**

Make-ups: *There are no make-ups for clicker questions because answers are provided during class; however, as specified above, your 4 lowest clicker scores will be dropped to account for unforeseen circumstances. It is your responsibility to check your clicker points online within a week of these posting to Canvas. This is done so that you can make sure that your clicker is logging in your answers. This allows the instructor to fix any small technical issues. After that one week, there's nothing that the instructor can do if a student's clicker wasn't logging in points.*



Emergencies

Emergencies are unforeseeable and unavoidable events that preclude you from being able to attend class. Emergencies include:

- Serious illness/hospitalization
- Car accident in which you were directly involved
- Death of an immediate family member

You will be required to provide documentation (e.g., doctor's note [Note: NOT an R.N.'s note], copy of death certificate, police report) in order to be excused and be able to make-up the final exam or an assignment. The documentation provided must be a valid and verifiable written letter signed by a professional or some other type of irrefutable proof.

Examples that do not constitute an emergency:

- Having a mild cold
- Getting stuck in traffic
- Oversleeping
- Scheduling a routine doctor's appointment (i.e. not related to an emergency) on the day of an exam/assignment

Although some of these are unfortunate circumstances, they are not emergencies and will not be treated as such.

Incomplete Grades

In the case of extreme circumstances arising from reasons beyond your control (please, see description of emergencies above), an incomplete (IN) grade may be given at the instructor's discretion. Please Note:

- Official documentation will be required (NO exceptions)
- **IN grades will not be given prior to the drop date or after the course has ended.**
- In order to receive an IN grade, you must have completed at least half of the assigned course work and have a passing grade.
- An unfortunate event, such as the death of a family member, does not automatically guarantee that you will be granted an incomplete for the course. Each case will be carefully evaluated, and your overall performance will be taken into account when making a decision.
- If granted an incomplete, the course must be completed within two terms; otherwise, you will receive the grade you would have earned without being given credit for any incomplete assignments (this will likely be a failing grade).

Class Rules

In order to promote an environment conducive to learning, please adhere to the following common-sense rules:

- **Cell phone use:** Cell phones are not allowed during class, please keep them silenced/off. We will have a short break during most classes for students to use the restrooms, check messages/calls, etc.
- **Computers:** Although I encourage students to take handwritten notes, because [research](#) suggests these are more effective, you may use your laptop in class to take notes. Please refrain from web surfing/social media/Amazon/etc. Not only is this a poor use of the class time you have already paid for, but it is also disruptive to your fellow classmates.
- **Audio/video recording & photography:** Audio recording is allowed, but please **NO video recording/photography**, as all material will be posted on Canvas.
- **Posting class material:** Posting of class lecture notes and course materials to the internet is **not allowed and is considered an infringement of copyright law**, as images from textbooks are the property of the publisher.
- **Disruptive Behavior:** It is everyone's responsibility to maintain a professional environment that promotes learning, minimizes distractions, and protects students'/instructor's rights. Students who fail to adhere to the standard code of conduct set forth by the instructor and the [FIU Student Handbook](#) may be subject to disciplinary action in accordance to the FIU Student Handbook.



Academic Conduct

Academic Honesty: The purpose of this course, and of a college education in general, is to provide you with the knowledge you will need as a professional, and to empower you to think independently. Cheating and plagiarism are counterproductive to this purpose, disrespectful to your colleagues, and will not be tolerated. How you conduct yourself now is an indication of the kind of professional (physician, dentist, pharmacist, nurse, scientist, etc.) you will be in the future. Any instances of cheating (e.g. copying or allowing someone to copy from you during exams and quizzes, giving your friend your iClicker when you are absent to class or bringing a friend's iClicker to class, plagiarism, etc.) will be dealt with according to FIU's academic misconduct policies, which can be found [here](#). In addition to cheating, please remember that lying to a faculty member to obtain an unfair advantage is also considered academic misconduct and grounds for expulsion from the university.

Sexual Harassment: Sexual harassment violates student and faculty rights and will not be tolerated. FIU's sexual harassment policy can be found in the [FIU Student Handbook](#)



ADA Accommodation Statement

Students with documented disabilities as per the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973 (PL 933-112 Section 504) may request accommodations (physical or academic) by contacting the Disability Resource Center (tel. 305-348-3532, TTY/TDD 305-348-3852). The student is responsible for contacting the instructor as soon as possible, so that reasonable accommodations can be made.



Email Etiquette

Please feel free to email me if you have any questions or concerns. I will try to respond within 24-48 hours, but please keep in mind that I may not be able to respond right away if I receive your email in the evening or over the weekend. If you have questions about the material presented in lecture, it is preferable that you come to office hours. If you wait until the day before an exam to contact me about a doubt/question regarding the material for the exam, I may not see your email until the next day.

If you have a general question about due dates or assignments, you can also post your question to the Canvas Chat (see course menu) or the General Discussion Board. If your question/concern is of a personal nature (i.e. illness, grades), please contact me directly. In order to ensure that your email receives a timely response, please make sure to:

- **Include your name** (this is particularly important if you do not use Canvas to contact me, as your name may not appear associated with your email)
- Include a **relevant** subject heading (*Please DO NOT just hit reply to the last email/announcement you received from me*).

- Include [PCB 4023 in the subject heading](#) to ensure your email does not end up in my spam/junk folder
- [Use Canvas email](#) whenever possible.
- Use common courtesy and be professional.



Letters of Recommendation

I am happy to write letters of recommendations for students who earned a good grade (A for medical school applicants, no less than an A- for other applicants) in at least one of my courses. Nevertheless, keep in mind that earning a good grade in the course does not guarantee that I can write a letter for you. If you did not participate in class and never attended office hours, I will not have anything to say about you, since I do not know you, thus I will not be able to write you a letter.

All requests for letters of recommendations must wait until after the final grades for the course are posted (unless you have taken another class with me and have done well in that class). Please keep in mind that I will need at least a month's notice to be able to provide you with a letter, and will require the following from you:

- a copy of your unofficial transcript
- your curriculum vitae or resume
- a statement of purpose (for medical and dental school applicants)
- information about how/where to submit your letter.
- anything that can help me make a stronger case for my recommendation

To get an idea of the importance of asking letters of recommendations from faculty who actually know you, I recommend you take a look at the perspectives and advice of students admitted to the University of Michigan Medical School (click [here](#)). As these current medical students point out, faculty get many requests for letters of recommendations; if you want your professors to write you strong letters of recommendation, you need to stand out and you need to make sure they know more about you than just your grades.












[Please proceed to the next page to view the Course Schedule](#)

[This syllabus and schedule are subject to change](#)



Schedule

DATE	DAY	LECTURE	TOPIC	READING	QUIZ
Aug 20	Mon	-	Introduction to the Course		
Aug 22	Wed	1	Biochemistry & The Unity of Life	BSC: Chapter 1	
Aug 24	Fri	2	Review of Chemical Structure Water, Weak Bonds	Manual Section 1 BSC Ch. 2	
Aug 27	Mon	3	Water, Weak Bonds Functional Groups, Acids & Bases	BSC Ch. 2	
Aug 29	Wed	4	Amino Acids	BSC Ch. 3	L1 & 2
Aug 31	Fri	5	Amino Acids	BSC Ch. 3	
Sep 3	Mon		Labor Day Holiday (NO CLASS)	-	-
Sep 5	Wed	6	Protein Structure	BSC Ch. 4	L3 - 5
Sep 7	Fri		EXAM 1	Lectures 1 - 5	
Sep 10	Mon	7	Protein Structure	BSC Ch. 4	
Sep 12	Wed	8	Basic Concepts of Enzyme Action	BSC Ch. 6	L6 & 7
Sep 14	Fri	9	Kinetics & Regulation	BSC Ch. 7	
Sep 17	Mon	10	Kinetics & Regulation	BSC Ch. 7	
Sep 19	Wed	11	Mechanisms & Inhibitors	BSC Ch. 8	L8 - 10
Sep 21	Fri	12	Mechanisms & Inhibitors	BSC Ch. 8	
Sep 24	Mon	13	Hemoglobin: An Allosteric Protein	BSC Ch. 9	-
Sep 26	Wed		Review Activity		L9 - 12
Sep 28	Fri		EXAM 2	Lectures 6 - 12	
Oct 1	Mon	14	Carbohydrates	BSC Ch. 10	
Oct 3	Wed	15	Carbohydrates	BSC Ch. 10	
Oct 5	Fri	16	Lipids & Membranes	BSC Chapters 11 & 12	L13 - 15
Oct 8	Mon	17	Membrane Transport	BSC Chapter 12	
Oct 10	Wed	18	Amines & Amides	Intro GOBC Ch. 13	
Oct 12	Fri	19	Amines & Amides	Intro GOBC Ch. 13	L16 & 17
Oct 15	Mon	20	Metabolic Pathways, Carbohydrate Digestion	GOBC Ch. 22	
Oct 17	Wed		Review Activity		
Oct 19	Fri		EXAM 3	Lectures 13 - 19	

Oct 22	Mon	21	Carbohydrate Metabolism	GOBC Ch. 22	
Oct 24	Wed	22	Carbohydrate Metabolism	GOBC Ch. 22	
Oct 26	Fri	23	Aerobic Metabolism	GOBC Ch. 23	 L20 - 22
Oct 29	Mon	24	Aerobic Metabolism	GOBC Ch. 23	
Oct 31	Wed	25	Aerobic Metabolism	GOBC Ch. 23	
Nov 2	Fri	26	Lipid Metabolism	GOBC Ch. 24	 L23 - 25
Nov 5	Mon	27	Lipid Metabolism	GOBC Ch. 24	
Nov 7	Wed		Review Activity		
Nov 9	Fri		EXAM 4	Lectures 20 - 25	
Nov 12	Mon		Veterans Day (NO CLASS)	-	-
Nov 14	Wed	28	Amino Acid Metabolism	GOBC Ch. 24	
Nov 16	Fri	29	Amino Acid Metabolism	GOBC Ch. 24	 L26 & 27
Nov 19	Mon	30	Nucleic Acids	Intro GOBC Ch. 17	
Nov 21	Wed	31	Protein Synthesis	Intro GOBC Ch. 17	
Nov 23	Fri		Thanksgiving Holiday (NO CLASS)	-	-
Nov 26	Mon		Review Activity		
Nov 28	Wed		EXAM 5	Lectures 26 - 31	
Nov 30	Fri		Final Exam Review Activity		
TBA	TBA		FINAL EXAM	Lectures 1 - 31	