Important: the first week of class will be via Zoom only. Check the OAKS webpage for this class for the Zoom link.

Instructor Contact Information:
Dr. Marcello Forconi. Office: SSMB 302. Email: forconim@cofc.edu. Phone: 843-953-3616. Office hours: to be announced and via appointment. Office hours will be conducted via Zoom. If you have a question that can be answered over email, please email me and I will reply within 48 h. I am also happy to help you with the material in individual or group office hours. Email me with your availability, and we will schedule an appointment over Zoom.

Course Description:
Biochemistry I is an introduction to the chemistry of biological compounds, including study of the macromolecules necessary for life. A key principle you will see throughout the course is how the structure of biomolecules determines their function. We will also study how biological macromolecules are made from monomers, how ligands bind to proteins, how enzymes catalyze chemical reactions, and how DNA-based technologies have advanced our ability to understand living systems in health and disease. My goal in this course is to guide you through these topics to help you gain an appreciation for and understanding of these foundations of biochemistry. Many of you may choose to build on them in Biochemistry II, upper-level Biology courses, and/or graduate or professional school coursework to learn about metabolism and disease.

Credit Hours and pre-requisites.
CHEM 351 is 3 credit hours, and the pre-requisites are CHEM 232 and 232L. The Biochemistry Laboratory, CHEM 354L, is not a co-requisite for this class.

Student Learning Outcomes:
- Discuss how the structure of biological molecules determines their function
- Understand and apply principles of biological catalysis
- Appraise kinetic and thermodynamic data
- Employ chemical and thermodynamic principles to explain biological interactions

Important Dates:
The add/drop deadline is January 19. The deadline to withdraw is March 22. No classes on March 2 and March 4.. The last day of class is April 21. This day is a Wednesday but it is counted as a Thursday.
Course Topics:

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<tr>
<th>Topic</th>
<th>Chapters</th>
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<tbody>
<tr>
<td>Intro to biochemistry</td>
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<td>Water and buffers</td>
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<td>Amino acids and the primary structure of proteins</td>
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<td>Proteins: 3D structure and function</td>
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<td>Protein–ligand interactions</td>
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<td>Enzyme properties and kinetics</td>
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<td>Enzyme mechanisms</td>
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<td>Coenzymes and vitamins</td>
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<td>Carbohydrates</td>
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<td>Nucleotides and nucleic acids</td>
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<td>4</td>
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<td>Lipids and membranes</td>
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This syllabus is subject to change by the instructor at any time.

Required Materials:
2. Scientific calculator (e.g., TI-30Xa scientific calculator, approx. $10) that can handle scientific notation, log, antilog, exponents, and square roots. A graphing calculator is fine, but you may not program anything into it. You may not use your phone as a calculator on quizzes/exams.
3. Computer with internet access. Your computer should meet CofC's requirements. You will need to install the following software (free to you): Microsoft Word, Adobe Acrobat Reader, and Pymol (instructions for Pymol download are on OAKS).
4. Webcam
5. Microphone (You can use headphones/ear buds with a built-in mic)

Class Format, Etiquette, and Attendance:
Because of COVID restrictions, SSMB 138 cannot accommodate all the students registered for the class. Therefore, we will operate on the following schedule:

First Week of Class: the class will be entirely online. Use the Zoom link to join the class.

Second week of class onward:

a. **Tuesday**: students with last name initial A-L will be in class; students with M-Z initial will be connected via Zoom.

b. **Thursday**: students with last name initial M-Z will be in class; students with A-L initial will be connected via Zoom.
Instructions for in-class students.
1. Wear a face mask. Face masks should be worn properly, with nose and mouth fully covered. No masks with valve will be allowed. Students without a suitable face cover will not be allowed to remain in the room.
2. Properly clean your seating at the beginning and end of each session.
3. Respect social distancing within the class.
4. If you feel sick, do not come to class. You can attend the online session even if you have an initial different from the designated ones.

Instructions for Zoom students.
1. This class will be the same as a Biochemistry class occurring in a classroom, except we will meet online from different locations instead of meeting in one classroom. I strongly encourage you to treat this class the same as you would an in-person Biochemistry class and attend all class meetings. You will get the most from the class by attending so you can participate, ask questions, and avoid falling behind.
2. It should go without saying that you should be equally as respectful of me and your classmates as you would be in a physical classroom setting.
3. Sign into your licensed CofC Zoom account when you join the class Zoom meetings. Please use your first and last name as your display name. The Zoom link (or meeting ID and password) for all class meetings is found in the Announcements/News area of our OAKS page. Class sessions will be recorded via both voice and video recording. By remaining in this class, you consent to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in our class.
4. Unmute yourself to participate then mute yourself when you are done speaking so that your mic does not pick up background noise that makes it hard for others to hear.
Learning Assessment:

1. **Quizzes:** There will be quizzes throughout the course. Quizzes will likely be posted on the OAKS page for our class. Typically, quizzes will appear on Thursday afternoon and will be due on Monday night, but exact deadlines will be communicated as the quizzes get posted. Quizzes may require short answers or more elaborated ones. Other quizzes may be administered in the class. There will be no make-up quizzes.

2. **Tutorials:** There will be four tutorials that will help you to focus on the use of Excel and other simple tools (usually software freely available online or websites) to explore parts of the biochemistry curriculum. Due dates for the tutorials will be communicated in class.

3. **Homework project:** The homework project is your chance to explore an enzyme of your choosing to gain an appreciation for how enzymes work and to learn how to use software to view the 3D structure of a protein. Detailed information about the homework project will be posted after our discussion of enzymes in class. Late assignments will be accepted with a 10% reduction in grade for each day late; no assignments will be accepted after the last day of classes. You will have a large window of time to work on the assignment; to avoid any last-minute issues or unnecessary stress, complete the project ahead of the deadline.

   **Homework project = Tuesday April 13 at Noon**

4. **Final Exam:** The final exam is a cumulative exam. You must take it during our scheduled exam period unless you follow the College's protocol for re-scheduling a final exam and have all required paperwork processed and approved prior to 5 PM on the last day of class.

   **Final exam = Tuesday April 27, 1-3 pm**

5. **Participation:** This part of your grade rewards you for participating, both during our class meetings (in-person and on Zoom) and outside of class though the OAKS discussion boards. Discussion boards on each of the tutorials and possible practice homework problem sets will allow you to both give and receive help from classmates as you think through the homework problems. These discussion boards are not a place to post a complete answer key; instead, help each other with specific steps in a problem or a general strategy for approaching a problem. If you don't understand a problem, post a specific question on the thread or ask for help getting started. If you understand a problem, deepen your understanding by explaining your thought process to someone else who might need help getting started. I may post answers after you have had time to think about the problems and work through them. Waiting to look at the answers severely limits your learning; don't miss out on the value of attempting all the problems, first on your own, and then again if needed after receiving tips from your peers. To earn full credit on your participation grade, you will have to contribute to the discussion board in a meaningful way.
Grading Policy and Scale:
Quizzes 30%
Tutorials (8% each) 32%
Homework Project 14%
Final Exam 14%
Participation 10%

There is no grade replacement or assignment dropping policy.
There are no credit-bearing assignments other than those discussed in this syllabus.

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OAKS Course Site:
You should check both your CofC email address and the OAKS course site regularly, as announcements will be posted and communicated using these tools, in addition to the regular communication in the class (if possible).

How to Succeed in this Course:
I am often asked what recommendations I have about doing well in Biochemistry. I think the most important thing you can do is devote regular time to the class, even if the next exam feels far away. This includes some easy steps: attending class, participating in and staying actively engaged during class, and then reviewing your notes after class.

One thing that is important to understand is that there is no “one size fits all” solution in Biochemistry. Sometimes the best way to tackle a problem is to think about the nature of the atoms or the functional group involved in the interactions; sometimes you will have to think of macromolecules as blobs with some shape; and sometimes you will have to find a middle ground. At times, you will have to use precise math, but other times you will simply need a ballpark calculation. Thus, you will have to use your knowledge and your intuition to solve problems in the right, and more productive, way.

If you choose not to review your notes after class, then class time will become less effective for you. You will lose the opportunity to draw connections between the material we've already
covered and the new material, which means you will have a harder time understanding the new material. That effect tends to snowball and become worse the more you delay studying. So, make learning easier on yourself by keeping up with the material. Actively read through your notes after class, look up anything you don’t understand, and arrive at the next class ready to learn new material. Doing this will help you stay engaged during class and gain the most out of the class meeting, keep up with the material and feel confident about it, and avoid a massive cramming session before the next exam.

Unlike Organic Chemistry where a nearly infinite number of practice problems can be generated in which you look for patterns to predict reactions or mechanisms, Biochemistry I has a mixture of concepts and applications to pay attention to. I may post practice problems before each exam, and we may work some problems during class. Memorizing the answers to those and other practice problems, as the ones present in your book, is of very limited use; instead, you should study the material first, then work the problems, and only check the answer key once you have figured them out. Looking at the answer key and rationalizing the answer without figuring out how to solve the problem on your own is likely to give you a false sense of how prepared you are for the class, so I would strongly advise against doing that.

**Honor Code and Academic Integrity:**
1. It is your responsibility to conform to the College of Charleston Honor Code and Code of Conduct (http://deanofstudents.cofc.edu/policies-and-procedures/honor-code-and-code-of-conduct.php).
2. In this course, collaborative studying is encouraged, but all exams are to be completed individually, without the use of notes, unauthorized use of the internet, or the work of other people.
3. You may discuss the homework project with other classmates and help each other learn how to use Pymol, but you must perform your own work. You may not copy from someone else's work or from internet resources. You may not turn in work that you originally began/completed for a different class.
4. Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved. Incidents where the instructor determines the student’s actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student’s file. Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. Students can find the complete Honor Code and all related processes in the Student Handbook (refer to the link in the middle of this webpage for a PDF of the handbook http://deanofstudents.cofc.edu/honor-system/studenthandbook/).
SNAP (Students Needing Access Parity) and Disability Access:
The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104 (http://disabilityservices.cofc.edu/). Students approved for accommodations are responsible for notifying me as soon as possible and for contacting me at least one week before accommodation is needed.

Support Resources:
For help with a wide variety of tech issues, including how to use OAKS (http://blogs.cofc.edu/sits/tutorials/oaks_tutorials/) and Zoom (http://blogs.cofc.edu/sits/zoom-video-resources/), visit Student Instructional Technology Services (https://blogs.cofc.edu/sits/) and the library's guide to online learning http://tutorials.library.cofc.edu/tutorial/onlinestudent. Zoom support is at https://support.zoom.us/hc/en-us/articles/206175806. For issues with your CofC accounts, contact ITservicedesk@cofc.edu (843-953-3375). Student health services (843-953-5520), the Counseling Center (http://counseling.cofc.edu), and food and housing assistance (http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php) are also available. For important CofC information during the pandemic and other emergencies, visit https://continuity.cofc.edu/.