Welcome to CHEM 340: Biochemistry I!

Congratulations! You are finally in Biochemistry! As a Biochemistry, Chemistry or Biology major, you’ve spent at least two years taking pre-requisite courses in order to take biochemistry. Chances are you haven’t been exposed to what biochemistry is in much detail. This semester, we’re going to change all that. We are going to use all that chemistry and math that you’ve been learning to understand the molecular basis of life. This course syllabus outlines what you can expect from the course and what I expect from you. Consider it our plan for the semester. Like all plans, sometimes they need to be adjusted, so I am reserving my right to make announced changes to the syllabus as I see necessary. My name is Teaster Baird, Jr. and I am looking forward to being your guide on this journey!
Learning Facilitator Information

Your education is yours and the knowledge you gain and retain will be largely predicated on what you do to gain and retain it. With that in mind, I prefer to describe myself as your “Learning Facilitator.” My goal is not to just tell you what I know or what I think you should know. I see my role in your education as to help you get the information you need and provide you with the tools to use that information effectively and appropriately. Should you need to get in touch with me, my contact information is below:

Learning Facilitator: Teaster Baird, Jr. PhD

I prefer to be addressed as “Dr. Baird,” “Professor Baird” or “Professor.”

Virtual Office Hours: Tuesdays 3:00 - 5:00, Fridays 10:00 - 12:00 and by appointment.

Virtual Office (Zoom): https://sfsu.zoom.us/j/82914801177?pwd=eUpYRHJHeGrvS0g4eGxoUzRhUHZuUT09

Meeting ID: 829 1480 1177
Passcode: 662636

If my standing office hours are inconvenient for you, contact me to see if I can make an appointment at a time that works for both of us.

email: tbaird(at)sfsu.edu.

Email is the best way to contact me. However, if I do not respond immediately, don’t take it personally. Sometimes it takes a while for me to get through all the messages I receive.

Phone: 415.338.1288

Class Time and Required Materials

As we spent the last semester, this semester we will be holding class entirely online. I will be meeting twice weekly on Mondays and Wednesdays from 9:30 a.m. - 10:45 a.m. via Zoom. Please note that I will be meeting in real time, but each of the class meetings will be recorded and posted for you to view later if you wish. Although you won’t be penalized for not attending during the scheduled meeting time, you will not be able to earn “in-class” points.

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 - 10:45</td>
<td>Zoom</td>
<td>9:30 - 10:45</td>
<td>Zoom</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Virtual Classroom Info (Zoom):
https://sfsu.zoom.us/j/82473825655?pwd=cEhJaUoxdW12Y3I5dUJsdWE0ZEJ2Zz09
(also accessible directly from the iLearn site)

Meeting ID: 824 7382 5655
Passcode: 075601
Dial by your location: +1 669 900 6835 US (San Jose)
**Zoom Attendance and Etiquette:**

**Attendance.** I will be recording each of the class meetings and I will also posting my previously recorded podcasts. Because of that, and since we are meeting virtually, attendance during the virtual class meetings isn’t required. However, please note that I will be using clickers and they are part of your overall grade. I won’t be providing alternatives to clicker participation.

**Cameras/Video.** I will not be requiring you to turn on your video cameras (although I would love to see you). If you don’t want to have your camera on, it would be nice if you could put up photo of yourself, your pet or something that you feel represents you. It gets kind of depressing looking at empty black boxes all the time.

**Your Name.** Please include your name in your Zoom window so that I can be sure that everyone who is in attendance is supposed to be there. You can use the name you prefer to be called if it is different from the name on the roster. If you would like to, you can include your preferred pronouns as well. I’ve posted examples of some possibilities below.

**Asking Questions.** I want to encourage participation as much as possible. If you have a question during our Zoom class meetings, please ask! You can do so by either typing your question in the chat box or using the “raise hand” feature in Zoom. It can sometimes be difficult to see what is happening in the chat box on my end, so please be patient if your question isn’t addressed immediately.

**Chatting.** I would like the chat box to be used for class related content and not be a distraction, so please refrain from posting unrelated content publicly and limit private chats with your classmates.

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### Required Items

The only required purchase I’m asking you to make for the semester is a subscription to the Reef polling system. This is an app from the folks at iClicker that can replace in-class response remote for distance learning. This will allow me to see what your individual responses are and it will allow me to give you credit for responding. I will be using them for real time assessment of understanding in class. *This app is not supported by SF State.* It is available on both the Apple App Store and Google Play. To participate in class responses, you’ll need to purchase a subscription for the semester (if you already subscribed for other classes, no additional subscription purchase is necessary). A 6-month subscription (the minimum offered) is $15.99. If there are challenges or situations that make this purchase a burden for you, let me know and I can see if can make adjustments.
Optional Items

To reduce your costs, I’m not requiring a specific textbook for this semester. The course content will be driven by the in-class activities, discussions, group work and homework. However, you should consider procuring a textbook to assist your work flow and understanding. I have suggested some textbooks below. Both are available from a number of sources. The publishers offer more economical e-text options.

*Recommended Texts*

Lehninger: Principles of Biochemistry, 6th or 7th Editions, by Nelson and Cox (7th edition shown)

- Amazon.com (6th and 7th Editions)
- Textbooks.com (6th and 7th Editions)

Fundamentals of Biochemistry: Life at the Molecular Level, 4th and 5th Editions, by Voet, Voet and Pratt (5th Edition shown)

- Amazon.com (4th and 5th Editions)
- Textbooks.com (4th and 5th Editions)
Course Organization

In Biochem I, we will focus on proteins. My approach to this course is hierarchical. We will start out learning about the structures and chemistry of the fundamental building blocks and then move to more complex principles. The planned content of each module is outlined at the end of the syllabus. Please note that this is a plan and we may not cover every topic in each module. I tend to be somewhat fluid when it comes to course content. Since my goal is for you to learn and establish a strong foundational knowledge, I will not let time dictate the topics I cover and the pace at which I cover them.

Course Goals and Learning Objectives

My goal in this course is to provide you with a working knowledge of foundational biochemical principles such that you may apply them in understanding and analyzing biochemical problems and issues at large. Each section of the course will have its own learning objectives and I have course learning objectives as well. At the end of the course, you should be able to, at a minimum:

1. explain how the physical and chemical properties of water influence the structure and function of biological molecules
2. list and describe all the 20 standard amino acids (names, structures, and properties);
3. explain how the individual and collective properties (chemical and physical) of amino acids may contribute to certain structural and functional features of a protein;
4. identify and describe structural features observed in proteins;
5. describe general structure-function relationships in proteins;
6. describe and explain the different roles proteins play in maintaining cellular life;
7. illustrate and discuss the mechanisms of certain enzyme(s) in detail;
8. describe what is meant by Michealis-Menten kinetics;
9. identify and explain the major kinetic parameters that are used to characterize an enzyme;
10. explain and illustrate how kinetics can be used to determine mechanisms of enzyme inhibition;
11. outline the steps of certain metabolic pathways and explain specific steps in terms of objectives 1-10;
12. show how specific metabolic pathways are linked to and affect each other.

Learning Resources

I will be posting learning aids and materials on the iLearn site for the course. If you are registered for the class, you already have access to the iLearn website for this course. I will also use the iLearn site to post announcements for the course. You should check the announcements regularly to ensure that you are up to date on postings of lecture notes and other materials.

iLearn

I will post course materials and announcements on the University’s iLearn site at http://ilearn.sfsu.edu (details are below)

2. Login.
3. Select CHEM 0340-01 BIOCHEMISTRY I Spring 2021 from your course list.

Podcasts
To help you focus in class, I will post previous recordings of the video and audio from CHEM 340 on my department website, which is different from the iLearn site. The link is chemistry.sfsu.edu/~tbaird. The link on the site is called “Classcasts.” I will also post the link on the iLearn site for easy access. Even though the recordings are from previous iterations of the class, the content will be consistent with the topics that I cover this semester.

How to Study for This Course:
You may have heard that biochemistry is a hard course. I tend to disagree. Biochemistry is not new chemistry. It uses the principles you learned in general and organic chemistry (as well as physics and math), to explain the chemical behavior of biological systems. The most difficult part of biochemistry, historically, has probably the volume of information that you, the student, have to deal with. I have tried to make the course more accessible by cutting back on the volume of information and focusing on the principles that govern our understanding of the observations I make to generate that information. Here are general tips:

1. Study and review frequently!
2. Do not get behind. Doing so can put you in a situation from which it is nearly impossible to recover.
3. Work hard and diligently to thoroughly understand the core concepts and principles in each section. Subsequent topics will be built on these core concepts and principles.
4. Study and review frequently!
5. Work to understand as opposed to memorize. Some memorization will be required, but do not to make that your primary approach to the course material. I won’t.
6. Do the in-class activities. I have designed and the BIGAs and the Clicker Questions to help you understand the things that I want you to focus on. Doing these activities will help keep you oriented.
7. Study and review frequently!
8. Look for the logic. Everything should make sense. If it doesn’t, try to find out if you are misunderstanding a concept or if I did not explain it clearly.
9. Use all your resources. The lectures and in-class materials will be the primary source of information for the course, but you should find a textbook that will describe concepts in detail for you. Use the internet and other people as well, but with caution. For example, Wikipedia can be a good starting point, but don’t let it be your sole source of information.
10. Study with classmates. Science is best learned through collaboration! I know that working with others is more difficult when we are remote, but if you can, try to set up Zoom meetings or other meetings to collaborate and help each other out. Last semester, some students set up a Slack channel for this purpose. You all have talents and skills that you can use to help your classmates.
11. Study and review frequently!
12. If you are having difficulty understanding some material, seek help early. There isn’t a TA for this course, so try to make my office hours. Make an appointment with me if you can’t make it during the listed office hours.

The most important thing to know is that I want to see you succeed. I want you to do well. I want you to learn and feel that you have a working knowledge to grow from.
Grading Policies

One thing you should know about my approach to grading is that I don’t think that a grade necessarily accurately reflects your knowledge and abilities. My goal for you is to learn and develop a strong foundational knowledge of biochemistry and I have tried to develop a grading scheme that I hope aligns with this philosophy. This semester, I will be using a version of what is known as Standards Based Grading (SBG). In SBG, there is greater emphasis placed on achieving learning objectives instead of earning points. In our journey this semester, we will be evaluating you on your progressive proficiency in specific learning objectives which are associated with each module that is outlined in the Course Topic Schedule. This course is constructed such that the modules build on each other. You won’t be able to do well in Module 2 if you don’t understand Module 1 and so on. I will provide you with the learning objectives for each module as we move into it.

“In-Class” Exercises

Clickers: This semester, I will be using the Reef Polling (iClicker) in-class response system (clickers). I will present clicker questions during class throughout the semester, but I may not use them in every class meeting. I will use the clicker sessions as a mechanism to assess your understanding of the material in real time, but will be awarding credit for participation as well (see “Calculation of Final Grade,” below). Each clicker question will count for 1 pt. if answered at all, whether correctly or incorrectly. I want to assess your understanding so please answer honestly so that I can give you the guidance you need as a class and as individuals. Since scoring will not be based on correct or incorrect responses, to receive credit for each clicker session, you will need to respond to at least 80% of the questions.

BIGAs: I also will be doing approximately 10 small-group exercises that I call BIGAs (Biochemistry In-Class Group Activities-BIGAs) throughout the semester. These activities are based on the POGIL (Process Oriented Guided Inquiry Learning) approach. Because we won’t physically be in class, I will try and see how it works via groups in Zoom. You will be able to consult with others but you will have to turn in your own individual document to receive credit for a BIGA session. You will not receive grades for the BIGAs. Because of the number of students that are in this course, I won’t be able to give individual feedback in a timely manner, but I will give your group feedback to help you improve. However, in your individual submission, even though you worked with others, you should put your responses in your own words based on your understanding. Even if you think others in the group understand how to approach and respond to a question or prompt, but you don’t completely get it, it will be better to put what you understand as a response so that if you need help, I know how to help you. The BIGA sessions are meant to promote and develop critical and logical thinking about the subject material as well as discussion and communication skills between you and your classmates. Similar to the clicker sessions, I will use the BIGA sessions primarily as an assessment tool, but participation in the BIGA activities does count toward your final grade.

Assessments

I don’t like the idea of using traditional tests and exams as a measure of your progress, especially in this COVID-induced, remote instruction environment. So this semester — hopefully our last for the remote instruction — I won’t be giving any exams. Instead, I will be giving you smaller, semi-frequent periodic assessments. You can think of them as a progress check for where you are at that time. My approach to this is still developing, but my goal is to give you an assessment approximately every 2 weeks. I don’t want them to be high stakes, high pressure activities because I want you to focus on understanding and learning (and learning to love!) biochemistry. The format is still evolving, but here are the fundamental principles:

1. In the assessments, each question or problem will be tied to a specific learning objective. This way you’ll know specifically where you are doing well and where you need to focus more of your efforts.
2. You will not have to rely on memory alone. I'll let you know what resources are considered “fair
game” for each assessment.
3. It will be timed, but not synchronous, and I’ll give you sufficient time. You won’t be doing these
during class time.
4. I will give rate your responses on a 4 point scale. See Table X to see how the rating system works.
5. I will give you feedback on your response to let you know what you did right and what you did
wrong.
6. This is the most important thing. In order for this to work and to be useful to you (and me), I need
you to be honest with me and with yourself. I need you to behave ethically and adhere to a moral
code. Please follow the rules that will be given to you.

**Calculation of Final Grade**
The final grade will be based on your completion of the assigned activities (Clicker and BIGAs) and how
well you demonstrate proficiency in the learning objectives and Assessments:

1. The clicker sessions will be worth a maximum of 4 points.
   a. ≥ 80% of all sessions = 4 pts.
   b. ≥ 60% < 80% = 3 pts.
   c. ≥ 50% < 60% = 2 pts.
   d. ≥ 20% < 50% = 1 pt.
   e. < 20% = 0 pts
2. The BIGA activities will be worth a maximum of 4 points.
   a. ≥ 8 BIGAs completed = 4 pts.
   b. ≥ 5 < 8 BIGAs completed = 3 pts.
   c. ≥ 2 < 5 BIGAs completed = 2 pts.
   d. < 2 BIGAs completed = 0 pts.
3. Each assessment will be evaluated and scored based on the rubric found at the end of this syllabus.
   a. Your mastery of each learning objective will be evaluated in each Assessment and assigned a
      valued of 0, 1, 2, 3 or 4. See the end of the document for the meaning of each value.
   b. Your score for each Assessment will be the average of the scores for each learning objective.
4. Your final grade point for the semester will be the average of all components and mapped to the
corresponding letter grade as found in Table 2.
Extra Credit

There are no provisions for extra course credit, so please don’t ask. Do your best to get the regular credit.

Missed Assessments:

If you do not turn in a Modular Assessment, you will receive a “0” score for that Assessment. As policy, I will not give make-ups. However, we will consider providing a make-up if your circumstances are extreme or unusual.

Other Policies and Information

Pre-requisites:

CHEM 215 and CHEM 335 (or equivalents), should have been taken with a final grade of C or better earned. These classes must have been completed; they may not be taken concurrently with CHEM 340. Registered students who have not completed all of the pre-requisite courses will be dropped from the roll. If you have completed the pre-requisites at another institution, you may need to provide proof before are are allowed to enroll or remain in the course.

Add Policy:

Even though this class is going to be delivered remotely and there is technically no limit to the number of students that can be enrolled, I do have a limit to the number of students that I can handle. Priority will be given to those students in the following order (to be considered for adding based on priority assumes that pre-requisites have been satisfied):

<table>
<thead>
<tr>
<th>Priority</th>
<th>Classification</th>
<th>Major</th>
<th>Other Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SFSU Undergrad</td>
<td>Biochem/Chem/Biol</td>
<td>1st time enrollment and tried unsuccessfully to add in a previous semester and satisfied pre-reqs in that previous semester</td>
</tr>
<tr>
<td>2</td>
<td>Biochem</td>
<td>1st time enrollment</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Chem</td>
<td>1st time enrollment</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Biol</td>
<td>1st time enrollment</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>All Others</td>
<td>1st time enrollment</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>SFSU Grad</td>
<td>Chem/Biochem/Biol</td>
<td>1st time enrollment</td>
</tr>
<tr>
<td>7</td>
<td>Open University</td>
<td>All</td>
<td>1st time enrollment</td>
</tr>
</tbody>
</table>

Please note that the official registration wait list is only valid up until registration concludes. After that point, the wait list content or order is irrelevant and it is up to my discretion to add students as I see fit.

Students with Disabilities:

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/415-338-2472, video phone/415-335-7210) or by email (dprc@sfsu.edu).
**Student Disclosure of Sexual Violence:**
SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Title IX Coordinator by completing the report form available at http://titleix.sfsu.edu, emailing vpsaem@sfsu.edu or calling 338-2032. To disclose any such violence confidentially, contact:

- The SAFE Place - (415) 338-2208; https://psyservs.sfsu.edu/content/safe-place
- Counseling and Psychological Services Center - (415) 338-2208; https://psyservs.sfsu.edu

For more information on your rights and available resources: http://titleix.sfsu.edu

**COVID-19 and Our Campus**
Your health and safety is our paramount concern at SF State. During the COVID-19 pandemic, every member of our Gator community is expected to do their part in keeping fellow students, faculty, and staff safe and well. Feeling well and safe will support you in focusing on your academic success.

For the limited number of classes meeting face-to-face, In-person class attendance is an option, but not a requirement. Students who do not wish to or are unable to comply with these requirements will be allowed to take the class virtually or provided with other remote options for course completion.

Please consult the campus plan website (https://news.sfsu.edu/campus-plan) for up-to-date information and explanation of requirements. For all students attending in-person, the following are required:

1. Wear a face covering when around other people outside of those in your household.
2. Stay at least 6 feet physically distant from people outside the members of your household.
3. Stay home if you have one or more symptoms of COVID-19 (Please check in with the SF DPH website for the most up-to-date symptoms & testing: https://www.sfcdcp.org/wp-content/uploads/2020/04/GetTestedSF-Eng-052920.pdf)
4. If you would like to discuss reasonable accommodations based on disability related to COVID-19, please contact the Disability Programs & Resource Center: dprc@sfsu.edu.

Information is changing rapidly, as our health professionals, scholars, and researchers are learning more about COVID-19, and as such, we encourage you to frequently check your San Francisco State University email account and https://news.sfsu.edu/campus-plan/students-families for the most current information.

- You are encouraged to keep your emergency information updated on Campus Solutions in order to receive campus emergency alerts: https://upd.sfsu.edu/ENSFAQ
- You are also encouraged to provide your contact information to receive city of SF emergency alerts, including COVID-19 updates and instructions for public safety: https://sfdem.org/get-city-alerts
- If you have any questions regarding COVID-19 or your own health during this time, please reach out to Student Health Services: https://health.sfsu.edu
- If you are feeling overwhelmed, you are encouraged to connect with our on-campus health professionals in Counseling & Psychological Services: https://caps.sfsu.edu
- If you are looking for education on how to keep yourself and your loved ones healthy, then reach out to our Health Promotion & Wellness Team: https://wellness.sfsu.edu

**Student Resources**
A comprehensive list of the resources available to students can be found here: https://studentresources.sfsu.edu/resources
### Grading Scale and Interpretation

<table>
<thead>
<tr>
<th>Average Points</th>
<th>Letter Grade</th>
<th>The Meaning of the Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.70 - 4.00</td>
<td>A</td>
<td>You demonstrated an <strong>exceptionally high level of competency and understanding</strong>. You <strong>consistently exceeded expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>3.30 - 3.69</td>
<td>B+</td>
<td>You demonstrated a <strong>high level of competency and understanding</strong>. You <strong>frequently exceeded expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>3.00 - 3.29</td>
<td>B</td>
<td>You demonstrated a <strong>solid level of competency and understanding</strong>. You <strong>sometimes exceeded expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>2.70 - 2.99</td>
<td>B-</td>
<td>You demonstrated a <strong>practicable level of competency and understanding</strong>. You <strong>consistently met expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>2.50 - 2.69</td>
<td>C+</td>
<td>You demonstrated a <strong>fundamental level of competency and understanding</strong>. You <strong>frequently met expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>2.00 - 2.29</td>
<td>C</td>
<td>You demonstrated a <strong>moderate level of competency and understanding</strong>. You <strong>often met expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>1.70 - 1.99</td>
<td>C-</td>
<td>You <strong>inconsistently</strong> demonstrated a <strong>minimal level of competency and understanding</strong>. You <strong>sometimes met expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>1.50 - 1.69</td>
<td>D+</td>
<td>You <strong>rarely demonstrated a minimal level of competency and understanding</strong>. You <strong>rarely met expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>1.00 - 1.29</td>
<td>D</td>
<td>You <strong>rarely met expectations</strong> for achieving the learning objectives.</td>
</tr>
<tr>
<td>0.00 - 0.99</td>
<td>F</td>
<td>You demonstrated <strong>no competency or understanding</strong>. You <strong>did not meet any expectations</strong> for achieving the learning objectives.</td>
</tr>
</tbody>
</table>
# Course Topic Schedule

## Module 1. Basic Principles of Protein Chemistry and Structure

<table>
<thead>
<tr>
<th>Segment</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course Overview and Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Water, Acids, Bases and Buffers</td>
</tr>
<tr>
<td>3</td>
<td>Amino Acids</td>
</tr>
<tr>
<td>4</td>
<td>Protein Structure I: Peptides and Primary Structure</td>
</tr>
<tr>
<td>5</td>
<td>Protein Structure II: Higher Levels of Structure</td>
</tr>
</tbody>
</table>

## Module 2. Structure-Function Relationships in Proteins 1: Ligand Binding

<table>
<thead>
<tr>
<th>Segment</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Myoglobin</td>
</tr>
<tr>
<td>7</td>
<td>Hemoglobin</td>
</tr>
<tr>
<td>8</td>
<td>Antibodies</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Segment</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Enzymes and Catalysis</td>
</tr>
<tr>
<td>10</td>
<td>Enzyme Mechanisms: Lysozyme (or Enolase)</td>
</tr>
<tr>
<td>11</td>
<td>Enzyme Kinetics</td>
</tr>
<tr>
<td>12</td>
<td>Enzyme Inhibition</td>
</tr>
<tr>
<td>13</td>
<td>Regulatory Enzymes</td>
</tr>
</tbody>
</table>

## Module 4. Organized Protein Function: Central Metabolism

<table>
<thead>
<tr>
<th>Segment</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Bioenergetics (primarily a review, mostly on your own)</td>
</tr>
<tr>
<td>15</td>
<td>Glycolysis</td>
</tr>
<tr>
<td>16</td>
<td>The Citric Acid Cycle</td>
</tr>
<tr>
<td>17</td>
<td>Biological Redox Reactions</td>
</tr>
<tr>
<td>18</td>
<td>Electron Transport and Oxidative Phosphorylation</td>
</tr>
</tbody>
</table>

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12
Tentative Assessment Schedule

Here is the planned schedule for Assessments. However, I reserve the right to change the exam date as I see necessary. Any changes will be announced and any date change will be to move the Assessment to a later date, not an earlier one.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Date (Week of..)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>February 3</td>
</tr>
<tr>
<td>2</td>
<td>February 17</td>
</tr>
<tr>
<td>3</td>
<td>March 3</td>
</tr>
<tr>
<td>4</td>
<td>March 17</td>
</tr>
<tr>
<td>5</td>
<td>April 7</td>
</tr>
<tr>
<td>6</td>
<td>April 21</td>
</tr>
<tr>
<td>7</td>
<td>May 5</td>
</tr>
<tr>
<td>8</td>
<td>May 19</td>
</tr>
</tbody>
</table>

Evaluation Rubric

Each question of your assessments will be associated with a specific learning objective. Your answers/responses will be evaluated and rated using the rubric below. This will help you see where you are having trouble and where you are doing well. Your overall Assessment score will be the average of each of the ratings for each question.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Mastery Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>You have got this! You have demonstrated that you understand this learning objective thoroughly and can apply it convincingly!</td>
</tr>
<tr>
<td>3.0</td>
<td>You’ve mostly got it! You have demonstrated that you understand the ideal well, but sometimes make small mistakes or seem to get confused by subtleties.</td>
</tr>
<tr>
<td>2.0</td>
<td>You’re making progress. You have demonstrated that you understand somewhat, but you may still have misconceptions, gaps in knowledge or make serious mistakes.</td>
</tr>
<tr>
<td>1.0</td>
<td>You’re just beginning. You have demonstrated that you know a little about this, but not that you really understand it enough to apply.</td>
</tr>
<tr>
<td>0</td>
<td>You don’t seem to be getting it all. You haven’t demonstrated that you have any understanding of this at all. You’ve got a lot of work to do.</td>
</tr>
</tbody>
</table>