

# BCH 3025 SECTION 5901 SYLLABUS

## FUNDAMENTALS OF BIOCHEMISTRY

**BCH 3025**

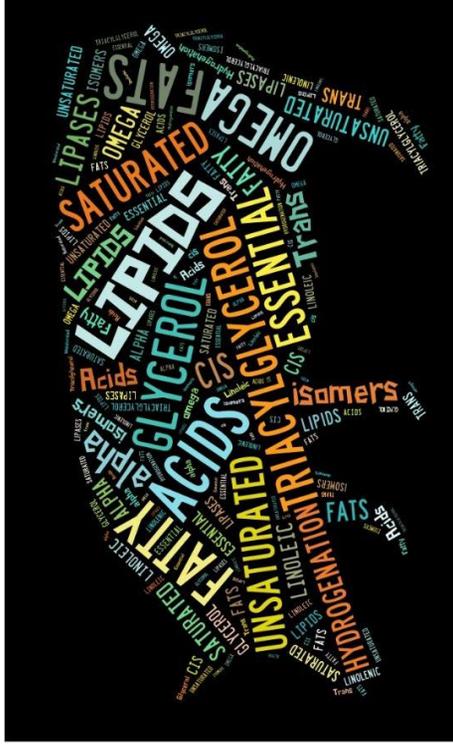
**SECTION 5901**

**Class # 1131**

**4 Credit Hours**

**FALL 2024**

**Online Class**



[middleearthbiochem.wordpress.com](http://middleearthbiochem.wordpress.com)

**INSTRUCTOR:** Peggy R. Borum, Ph.D.

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352-392-7553

**OFFICE HOURS:** Office hours for individual students by appointment using zoom. An opportunity to informally chat about this course, biochemistry in general, or most any topic that interests the student is available every Wednesday afternoon at 3:00 PM and every Sunday at 3:00 PM Eastern time (Join URL: <https://uflphi.zoom.us/j/4742141397>). If you have any special requests (make up exams etc.), zoom chats are the best place for us to discuss requests in order to avoid often easy to misunderstand long email threads. If you need to chat at a different time, please send a request for an appointment to the instructor.

**COURSE TA:** Jake Shine – [jshine@ufl.edu](mailto:jshine@ufl.edu)

Jake is a graduate student in the Department of Food Science and Human Nutrition. If you have questions or need assistance from Jake, you should email him through E-Learning to schedule an appointment. If for some reason that does not work, his University of Florida email address is given above.

**COURSE WEBSITE:** <http://lss.at.ufl.edu> (Canvas)

**COURSE COMMUNICATIONS:** Communication is important to all of us. For email communication, use of the Canvas email is probably the better choice because the instructor's regular email box is often overflowing. In Canvas, it is easy to email both the instructor and the TA at the same time. The best

method for resolving technical issues is to [visit the helpdesk website](#) or call 352-392-4357). Keep in mind that the TA is taking the lead on the journal club activities and thus questions pertaining to the journal club are best addressed by him.

**REQUIRED TEXT:** The required text for BCH 3025 is Lehninger Principles of Biochemistry by David L. Nelson, Michael M. Cox, and Aaron A. Hoskins Eighth Edition, 2021.

**ACHIEVE ONLINE MATERIALS FOR TEXTBOOK AND SELF-STUDY:** The eBook text and the online materials are available via Achieve. When you purchased access to Achieve, you received a code needed to login to Achieve. When you log into Canvas you will see Macmillan Learning on the left navigation pane. This will take you to a screen where you will need your code for the first time you login. The activities on Achieve are for self-study to improve your understanding of the material and to assist you in optimizing your performance on the graded material which is all on the Canvas course account for BCH 3025. The electronic textbook is available to you at any time you have internet access without carrying a heavy book.

**COURSE DESCRIPTION:** Introducing biochemistry with emphasis on intermediary metabolism.

**PREREQUISITE KNOWLEDGE AND SKILLS:** Prereq: CHM 2200 and CHM 2200L (or preferably CHM 2210, CHM 2211 and CHM 2211L) with minimum grades of C

**PURPOSE OF COURSE:** The course should introduce each student to biochemical concepts and provide different mechanisms for each student to demonstrate to future admission committees or employers the ability to:

- Answer questions about biochemical concepts and facts.
- Critically read biochemical literature and communicate the finding to peers.
- Utilize the internet to find the most recent credible information concerning biochemical concepts and questions.

**COURSE GOALS AND/OR OBJECTIVES:** By the end of this course, students will:

1. Appreciate why the broad spectrum of biochemistry is important in medicine, agriculture, pharmaceuticals, and ethics.
2. Understand the basis for the molecular structure of different biochemical compounds.
3. Understand the biosynthesis of basic biochemical “building blocks”.
4. Understand the conformation, dynamics, and function of proteins.
5. Understand the generation and storage of metabolic energy.
6. Understand overall aspects of the integration of metabolic processes.

7. Have developed the skills to accumulate, integrate, and apply biochemical information in their own field of study.

**INSTRUCTIONAL METHODS:** Each chapter covered by the exams is presented in different formats. The textbook is your main source of information. For those who prefer to read the lecture, PowerPoint slides including the lecture notes can be downloaded. For the more audio learners there are narrated lectures with slides. Online more visual individual activities are available via the Achieve application. Each student has the material in several formats and can cover the material at a pace that is most comfortable for the individual. On average, two to four chapters will be introduced each week of the course. Short quizzes will be given as many of the chapters are introduced and will comprise 20% of the course grade. The quizzes are an incentive to read the chapters as they are scheduled for the course and to give a “preview” of the exam to come. An extra credit opportunity will be provided in the form of an optional term paper.

The chapter modules are organized by week with Monday being the first day of the week and Friday being the last day of the week.

Each module has a section “Beyond the Textbook” for those students who wish to venture beyond the material in the textbook.

## COURSE POLICIES:

**ATTENDANCE POLICY:** BCH 3025 is completely online, but has strict due dates listed in the syllabus. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

**QUIZ/EXAM POLICY:** Quizzes and exams use the Quiz tool on E-learning. The exams must be taken using Honorlock as described in the course technology section below.

**MAKE-UP POLICY:** There are no regularly scheduled makeup exams, quizzes, and no dropped scores. Reasons for makeup exams, quizzes, or assignments include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, participation in official university activities such as music performances, athletic competition or debate, and court-imposed legal obligations (e.g., jury duty or subpoena). Any allowance will be arranged on a case-by-case basis.

**ASSIGNMENT POLICY:** The Journal Club and the Biochemistry Treasure Hunts are required assignments with specific due dates listed in the syllabus. The Extra Credit Paper and Flawless Diamond activities are optional assignments but also with specific due dates.

**COURSE TECHNOLOGY:** Canvas will be used to present course material, to communicate, to post assignments, and to take quizzes and exams. The textbook can be purchased as an online subscription.

An Achieve subscription can also be purchased to have access to online self-study materials that are very visual.

## **PROCTORED EXAMS**

Honorlock will proctor your 4 exams this semester. Honorlock is an online proctoring service that allows you to take your exam from the comfort of your home. You do not need to create an account, download software, or schedule an appointment in advance. Honorlock is available 24/7, and all that is required is a computer, a working webcam/microphone, your id, and a stable internet connection.

To get started, you will need google chrome and download the [honorlock chrome extension](#).

When you are ready to complete your assessment, log into canvas, go to your course, and click on your exam. Clicking "launch proctoring" will begin the honorlock authentication process, where you will take a picture of yourself, show your id, and complete a scan of your room. Honorlock will be recording your exam session through your webcam, microphone, and recording your screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device.

Honorlock support is available 24/7/365. If you encounter any issues, you may contact them through live chat on the [support page](#) or within the exam itself. Some guides you should review are [honorlock msrs](#), [student faq](#), [honorlock knowledge base](#), and [how to use honorlock](#). Good luck!

## **JOURNAL CLUB ASSIGNMENT:**

**WHAT IS AN ELECTRONIC JOURNAL CLUB?** An electronic journal club is a presentation of a scientific paper on a topic of common interest to you and your audience using the media of a PowerPoint file. This assignment has many objectives:

- Encourage you to read the current literature in biochemistry – both the paper that you choose, and the paper chosen by your partner.
- Provide an opportunity for you to explain to peers the literature that you have read.
- Acquire editorial experience as you review the work of your partner.
- Demonstrate ability to follow detailed instructions for preparing a document explaining biochemical concepts.

- Understanding that an outstanding final product depends on a foundation of layers of effort that we call steps in this assignment. (One cannot skip to the end)

An outstanding journal club is a multistep process with each step building on the previous step. In practice one cannot skip the foundational steps and expect success. Mirroring the real world, in this assignment **each step must be completed by the deadline before the student is allowed to progress to the next step.**

The presentation includes:

1. the data from the paper,
2. the authors interpretation of the data,
3. your critique of the work,
4. your assessment of what should be done next in the research field, and
5. a list of questions you want your audience to carefully consider.

**WHY DO I WANT TO DO IT?** Whether you are trying to decide what to do for a patient that does not fit into any treatment algorithm, or you are preparing research or a public policy proposal, you need to know the latest information available.

You not only need to know about the data, but you also need to be able to present the data and your ideas to your colleagues during the decision-making process.

BCH 3025 journal club is 40 points (10%) of your grade in this course.

**HOW DO I FIND JOURNAL ARTICLES AND DECIDE WHICH ONE TO USE?** If you are off campus, connect to UF Library Resources using the instructions in this link: <http://cms.uflib.ufl.edu/offcampus>.

PubMed and web of science are two databases very frequently used to quickly locate scientific papers of interest. To access PubMed with links to journal articles available in UF libraries go to **PubMed (with uf links)** or (<http://www.ncbi.nlm.nih.gov/sites/entrez?holding=ufhscilib>). Different libraries at the University of Florida have on their homepages a variety of help features and tutorials to assist you in developing your skills using PubMed and web of science.

#### [Tips for Using PubMed](#)

**Description:** An editable version of a two-page handout on the very basics of PubMed.

**Format:** pdf

**Subjects:** PubMed

**Date Last Revised:** 11/2021

**For this assignment you must choose an article as your primary source that has been published in the last 12 months in one of the following journals.** Your article must be a primary research article, and NOT a review article, meta-analysis, or commentary. Be sure to choose an article that has the following sections: Introduction, Methods, Results, and Discussion. Please choose your article from the following journals. Note that the **name of the journal must be exactly as listed.** For example, **“Nature” is a good choice, but “Nature Communications” is not** on the list of acceptable choices.

1. Science
2. Nature
3. Journal of Biological Chemistry
4. Trends in Biochemical Sciences
5. Journal of Nutrition
6. American Journal of Clinical Nutrition
7. New England Journal of Medicine
8. Pediatric Research
9. Journal of the American Medical Association
10. Journal of Animal Science
11. American Journal of Veterinary Research
12. American Journal of Botany
13. IEE Transactions on Biomedical Engineering

**HOW SHOULD I GO ABOUT READING A SCIENTIFIC PAPER?** Before submitting your paper for your journal club, it is very important that you obtain the paper and read the entire paper. Simply reading the abstract on PubMed and hoping that the paper can be obtained and will be understandable has caused many students significant grief in previous semesters.

Different people have different approaches to reading a paper. Suggestions can be found at the following resources:

1. “Reading a Scientific Article.”, North Central University  
<https://ncu.libguides.com/researchprocess/readingscientificarticle>
2. “How to Read a Scientific Article”, Purdue University,  
<https://www.lib.purdue.edu/sites/default/files/libraries/engr/Tutorials/Newest%20Scientific%20Paper.pdf>
2. “How to Read a Scientific Article”, Rice University,  
(<http://www.owl.net.rice.edu/~cainproj/courses/HowToReadSciArticle.pdf>)

**HOW DO I DECIDE WHAT TO PRESENT TO THE JOURNAL CLUB AUDIENCE?** What is the take home message for my audience? How do I present it so that they remember it?

1. “5 Tips for Journal Club First Timers” – NIH Intramural Research Program  
<https://irp.nih.gov/blog/post/2015/03/5-tips-for-journal-club-first-timers>

2. “Journal Club Tips”, Department of Pharmacology, University of Virginia School of Medicine(<https://pharm.virginia.edu/files/2014/03/JournalClubTips.pdf> )

**HOW DO I PREPARE THE POWERPOINT SLIDES?** The design of the PowerPoint presentation is very important in communicating your ideas to your audience. It is important to spend time developing your skills in this area. There are several websites that can assist you. A good one is from Penn State University entitled “Rethinking the Design of Presentation Slides: The Assertion-Evidence Structure” (<http://www.writing.engr.psu.edu/slides.htm>). Some other good resources include:

1. Published paper from American Roentgen Ray Society, author Daffner, R. H. “On Improvement of Scientific Presentations: Using PowerPoint” American Journal of Roentgenology 2003; 181:47-49 (<http://www.ajronline.org/doi/full/10.2214/ajr.181.1.1810047>)
2. Published paper from The Scientist, author Bob Grant. “Pimp your PowerPoint” The Scientist, 2010; 24:76. <http://www.the-scientist.com/?articles.view/articleNo/28818/title/Pimp-your-PowerPoint/>
3. A talk available on YouTube entitled “Improve your PowerPoint” by Penn State University communications professor Michael Ally. [http://www.youtube.com/watch?v=d04w4vwByDI&feature=player\\_embedded](http://www.youtube.com/watch?v=d04w4vwByDI&feature=player_embedded)
4. Tables and figures from the article should be included in your presentation. You may copy these directly from the article or you can create your own table with the information from the article. One method to copy tables and figures from the article is to select “print screen” and then paste directly into your PowerPoint. You can then crop the image in PowerPoint. You can also use the Snipping Tool on Windows computers or the Grab tool on Mac.

**STEPS FOR COMPLETING JOURNAL CLUB ASSIGNMENTS ARE AS FOLLOWS:** You will work as an Author of your parts of the assignment for the article you have chosen to present. After you have turned in the draft of your presentation, you will be grouped with one other student who will be your Editor. You will serve as editor for that student in return. Success will depend on the diligence of you and your partner.

You and your journal club partner will be assigned a group on Discussions to conduct journal club posting steps.

At the conclusion of all the steps for journal club assignment activities, you will be acquainted with both your article and the article of your partner.

Each Journal Club step must be completed before continuing on to the next step. **If you miss a step, you do not get points for that step, and you cannot continue the assignment and thus lose all points for the remaining steps.**

#### **INSTRUCTIONS AND GRADING OF THE JOURNAL CLUB ASSIGNMENTS STEPS:**

**Step 1 (Due September 04, 2024, before 3:00 PM)-** Authors must post the citation for your chosen journal club article.

1. Attach a Word document onto the “Post Article” assignment with the citation for the article. Review the tutorial for uploading an attachment when submitting an assignment. No points will be assigned, but this is a required step to continue the journal club assignment.

2. Your article must meet a primary research article from one of the thirteen journals listed for this assignment. Your citation formatting must follow the Journal of Nutrition style, which uses International Committee of Medical Journal Editors (ICMJE) recommendations (<http://www.ncbi.nlm.nih.gov/books/NBK7282/>).

3. You can find additional instructions and a video tutorial on the Assignments page for Step 1.

**Step 2 (Due September 13, 2024, before 3:00 PM)**- Authors must post an outline of the journal club presentation.

Points for Step 2 = 5 points-

1. Attach a Word document onto the “Presentation Outline” assignment repeating the citation for the article and providing an outline of your intended PPT presentation. You can receive a maximum of 5 points for this step using the following criteria:

- Rationale for choosing paper
- Clear description of paper goals
- Summary of the methods and experimental design
- Clear description of results pertaining to each goal of paper
- Summary of paper’s discussion
- Critique of paper and suggestions for future work

**Step 3 (Due October 02, 2024, before 3:00 PM)**- Authors must post a draft of the journal club PowerPoint.

Points for Step 3 = 5 points-

1. Attach a PowerPoint file onto the “Draft PPT Presentation” assignment. You can receive a maximum of 5 points for this step using the following criteria:

- Clarity of content
- Flow of information
- Slide Quality
- JC author’s discussion of paper results
- JC author’s suggestion for future work

**Step 4 (Due October 11, 2024, before 3:00 PM)**- After you have turned in the draft of your presentation, you will be grouped with one other student who will be your Editor.

Points for Step 4 = -2 points-

1. After assignment to groups, attach the same PowerPoint draft file used in Step 3 onto the assigned Journal Club Group discussion board for access by your partner for their critique. You will receive 2 points for this step.

**Step 5 (Due October 16, 2024, before 3:00 PM)**- Editors must post a one-page single space final critique of their partner's draft journal club PowerPoint.

Points for Step 5 = -8 points-

1. Attach a Word document to "Final Critique" on the Assignments page. **This is the work that will be graded.**

2. Next attach the critique onto the assigned Journal Club Group discussion board to provide your partner final suggestions on improving their presentation. You can receive a maximum of 8 points for Step 5 using the following criteria:

- Discussion of the 5 areas of evaluation of PowerPoint draft
- Suggestions for Improvement

**Step 6 (Due November 01, 2024, before 3:00 PM)**- Authors must post their final PowerPoint presentation.

Points for Step 6 = -20 points-

1. Attach the PowerPoint file to "Final Presentation" on the Assignments page. The final presentation is submitted to the instructor only. You can receive a maximum of 20 points for this step using the following criteria:

- Rationale for choosing paper
- Clear description of paper goals
- Summary of the methods and experimental design
- Clear description of results pertaining to each goal of paper
- Summary of paper's discussion
- Critique of paper and suggestions for future work
  - Flow of information
  - Slide Quality

OVERVIEW OF JOURNAL CLUB PROJECT STEPS

| Overview of Journal Club Project Steps |                               |           |                  |  |  |   |   |
|--|-------------------------------|-----------|------------------|--|--|---|---|
|  | Description                   | Graded as | Points available | Where to submit                                      | Comments for assignments submitted before deadline   | Partial credit if submitted before deadline | If step is not completed/late   |
| <b>Step 1</b>                          | Make Citation                 | P/F       | 0                | <b>Assignments tab</b> for Step 1 before deadline    | Citation must be formatted correctly and meet criteria to receive "P"                      | No  | Cannot continue with steps 2-6, <b>do not earn 40 points</b>                      |
| <b>Step 2</b>                          | Make Outline                  | Points    | 5                | <b>Assignments tab</b> for Step 2 before deadline    | Outline must meet grading criteria to receive full "5"                                     | Yes   | Cannot continue with steps 3-6, <b>do not earn 40 points</b>                      |
| <b>Step 3</b>                          | Make PowerPoint               | Points    | 5                | <b>Assignments tab</b> for Step 3 before deadline    | PowerPoint must meet grading criteria to receive full "5"                                  | Yes   | Cannot continue with steps 4-6 Journal club project, <b>do not earn 35 points</b> |
| <b>Step 4</b>                          | Share PowerPoint with Partner | Points    | 2                | <b>Discussion board</b> for Step 4/5 before deadline | PowerPoint must be able to be accessed by partner <i>from discussion board</i> by deadline | No  | Cannot continue with steps 5-6 Journal club project, <b>do not earn 30 points</b> |
| <b>Step 5</b>                          | Share Critique with Partner   | Points    | 8                | <b>Assignments tab</b> for step 5 before deadline    | Critique must meet grading criteria to receive full "8"                                    | Yes   | Cannot continue with step 6 Journal club project, <b>do not earn 28 points</b>    |
|  |                               | P/F       | 0                | <b>Discussion board</b> for Step 4/5 before deadline | Critique must be able to be accessed by partner <i>from discussion board</i> by deadline   | No  | Cannot continue with step 6 Journal club project, <b>do not earn 20 points</b>    |
| <b>Step 6</b>                          | Final PowerPoint              | Points    | 20               | <b>Assignments tab</b> for Step 6 before deadline    | Final PowerPoint must meet grading criteria to receive full "20"                           | Yes   | Do not earn 20 points   |

## TREASURE HUNTS ASSIGNMENT:

**WHY DO I WANT TO DO TREASURE HUNTS?** When we have a question, we often “go online”. We might turn to Google, YouTube, a favorite app, PubMed, etc. The same is true for classes – even Biochemistry. A treasure hunt including one on the internet can lead to anything from treasure to frightful garbage on most subjects. So be careful. You will be using online sources to find important information for the rest of your professional life, so these skills are important to develop.

**WHAT IS TREASURE?** You are assigned to four (4) treasure hunts. The treasure can be a video of a symposium presentation, a PowerPoint presentation of some new research result, a peer-reviewed article in a scientific journal, an original Ted talk – anything on the internet that **a biochemist would consider a treasure**. There are many study aids, tutorials, class lectures, Ted-Ed talks and textbook supplements on the internet that you may find useful for studying, but they are not treasures.

**WHAT DOES THE TREASURE HUNT ASSIGNMENT REQUIRE?** This class is divided into 4 sections with each section ending with an exam. The calendar at the end of the syllabus lists the detailed schedule of this course. During each of the four sections of the course, look for a treasure online that adds to the subject matter discussed. By the due date, you must post to the appropriate assignment tool, the URL to the treasure and an accompanying Word document using the following template:

- Title of treasure
- Who created the treasure including their qualifications?
- The class module(s) relevant to the treasure
- The important take home messages found in the treasure
- Why your classmates should view the treasure
- What you would change in the treasure if you had all the money and time needed

Each of the 4 treasures are worth 10 points. You will be graded on your recognition and choice of treasure and on the information, you provide in the accompanying Word document using the template presented above.

Due Date for Treasure Hunts:

- **Wednesday, September 04, 2024, before noon:** Treasure Hunt #1.
- **Wednesday, September 25, 2024, before noon:** Treasure Hunt #2.
- **Wednesday, October 23, 2024, before noon:** Treasure Hunt #3.
- **Friday, November 25, 2024, before noon:** Treasure Hunt #4.

### **FLAWLESS DIAMOND OPTIONAL ACTIVITY FOR EXTRA CREDIT:**

**WHY DO A FLAWLESS DIAMOND ACTIVITY?** It is hard to rank the value of treasures. Diamonds are among the most valuable jewels, but even they are of variable value. The Gemological Institute of America (GIA) has created scales for grading the clarity, the color, the cut and the carat of a diamond. When you look at their website (<http://www.gia.edu/gia-about/4Cs-Clarity>) you quickly notice that each category has many grades because it is hard to rank a collection of very valuable gems. But we all know that the sentimental value of diamonds for an individual often outweighs the scales of the gemologist. For example, the diamond my husband to be gave me more than 50 years ago is the most valuable diamond in the world no matter what any gemologist says. So, let's tackle a hard job and have some fun doing it. Everyone in class will post a biochemical treasure for an assignment in class. But which one is the flawless diamond – or the closest to the flawless diamond?

**WHAT IS THE PROCEDURE FOR THE OPTIONAL FLAWLESS DIAMOND ACTIVITY?** Using the same deadline as the class assignment, post your treasure to the discussion board “Treasure Hunt (Post your treasure here)”. Include your name and Treasure #1 (Treasure #2, Treasure 3#, and Treasure #4 in succession). After reviewing all your colleagues’ treasures, post your vote for the flawless diamond among all the treasures to the discussion board “Treasure Hunt (Vote for the flawless diamond here)”. Include the name of the person who posted the original treasure and a discussion of why you chose that treasure as the flawless diamond. Your vote must be posted within 24 hours after the deadline for the original Treasure Hunt assignment.

Due Dates for Flawless Diamond:

- **Thursday, September 05, 2024, before noon:** Flawless Diamond #1.
- **Thursday, September 26, 2024, before noon:** Flawless Diamond #2.
- **Thursday, October 24, 2024, before noon:** Flawless Diamond #3.
- **Monday, December 02, 2024, before noon:** Flawless Diamond #4.

**EXTRA POINTS:** If you decide to participate by posting both your original treasure to the discussion board “Treasure Hunt (Post your treasure here)” by the deadline for the original Treasure Hunt assignment and you post your vote by 24 hours after the deadline for the original Treasure Hunt assignment, you will receive one extra credit point. Four points might mean the difference in a letter grade when points are totaled at the end of the semester. It will be a way to study for the upcoming exam using the treasures that your classmates have found helpful to them. It will also be fun!

### EXTRA CREDIT PAPER OPTIONAL ACTIVITY:

**WHAT IS THE EXTRA CREDIT PAPER ACTIVITY?** The extra credit paper assignment is an opportunity to earn up to 25 extra points in the course. Note that the extra credit paper assignment is optional, but once you sign-up for the extra credit paper, you cannot change your mind later. Read the expectations for the extra credit paper carefully before signing up to complete the extra credit.

**WHAT ARE THE EXPECTATIONS FOR THE EXTRA CREDIT PAPER?** You should develop a 10-20-page, double-spaced research-based paper on a topic you select from a list of options (Example: Folate and neural tube defects).

- Do not forget that this is a biochemistry class and the paper should focus on the biochemical aspects of the topic. The paper should be a scientific paper designed for an audience that has completed a biochemistry class. The paper should not be designed for the public or read like a website.
- Your paper should include an abstract, an introduction, a body, a conclusion, a list of references, and an appendix. You should define the problem/issue, indicate its significance, and review relevant literature that includes evidence that supports the arguments for and against the problem/issue. Please be sure to make your ideas, thoughts, arguments, theories, facts, or evidence very clear to the reader.
- You must document evidence with in-text citations, according to the format used by the Journal of Nutrition (<http://jn.nutrition.org/>). ASN journals’ reference format is consistent with the [NLM’s International Committee of Medical Journal Editors \(ICMJE\) Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals: Sample References](#) webpage and detailed in the NLM’s Citing Medicine, 2nd edition (<https://www.ncbi.nlm.nih.gov/books/NBK7256/>). You should use peer-reviewed information for your references. References from internet sources should be

used cautiously. If you copy a phrase or a sentence from another source, you must quote that source.

- Using the words of someone else is simply a form of academic dishonesty and will not be tolerated. The paper should be prepared solely for this class. Turnitin will be used to evaluate the originality of the paper as part of the grading process.
- After your references section, you should add an appendix that lists your top five peer-reviewed citations. Give a short summary of each of the citations explaining why you chose that citation.

**EXTRA POINTS AVAILABLE:** Even though you can earn up to 25 points on this paper, it does not imply that you will receive all 25 points. There is a possibility that no points will be given if the reader gets the impression that the paper submitted does not include intelligent, well-organized, and thorough literature review discussions on the topic. If the paper is not of adequate quality and does not include the criteria listed above, you will be deducted 5 points from the total grade earned in class. To be graded, the extra credit paper must be turned into the Extra Credit Paper Assignment tool on the BCH 3025 homepage as a Word document attachment. Any papers submitted after 12 Noon of the due date or not submitted, will result in 0 points (your paper will not be graded) in addition to a reduction of 5 points from your total points earned in class. No late papers will be accepted.

**EXTRA CREDIT PAPER PROCEDURE:** If you are interested in this extra credit assignment, click on the Extra Credit Topic page listing more than 100 potential topics. Review all the topics available. Once you select a topic, you will need to sign up for the topic on the “Extra Credit Paper Sign-up” in Discussions. Before you sign-up, make sure that your topic is not already selected by another student. If the topic you were going to choose is already selected, then you will need to select a different topic. To sign up for the extra credit, post to Discussions. In your post, write the topic you selected. The post on the discussion board will serve as a contract between you and Dr. Borum that you will complete the extra credit assignment. Changing your mind after signing up for the extra credit paper or deleting your post is not an option after you sign up for the extra credit.

**REQUEST FOR A TOPIC NOT LISTED:** If you would like to write an extra credit paper on a topic not listed, you may submit a request to Dr. Borum via e-mail on Canvas. Your request must consist of a one-page summary of the paper you wish to write. The summary must be sent as a Word document attached to the e-mail. If approved, your topic will be added to the list of topics on the Extra Credit Topic page, and you will be assigned the topic.

**NEW FOR FALL 2024:** **ChatGPT Assisted Extra Credit Paper** addressing a biochemical topic pertaining to metabolic homeostasis.

Many of us think that the recent advancement in use of large language models will change the way we write and interact with information. As with all powerful new tools, it can be beneficial or detrimental to us. Another option to the extra credit opportunity described above is the **ChatGPT Assisted Extra Credit Paper**. The deadlines and the number of points available are the same for both the traditional and ChatCPT assisted options. **The difference is that the ChatCPT assisted topic will be chosen by the student and the instructor together.** You submit queries to ChatGPT concerning a topic related to the biochemistry of metabolic homeostasis. You will evaluate the output and extend the value of the information by adding your critical thinking and creativity to the discussion of the topic. You will submit the original queries, the ChatGPT output, the file that presents your paper concerning the topic which includes a second required appendix evaluating how useful you found the output to be, Biochemistry zoom chats are available each week for interaction with the instructor and should be used if you choose this approach.

The biochemistry of metabolic homeostasis is needed to produce the desired phenotype of all life as we know it. It is an important determinant of the quality of our daily lives and impacts all fields involving living things. The topics will pertain to the biochemistry of homeostasis of energy metabolism in health and disease throughout the lifecycle for humans and any other living organism that interests the student author.

#### **Due Dates for the Optional Extra Credit Paper:**

- **Monday, September 09, 2024, before noon:** Deadline to request an extra credit paper on a topic not listed.
- **Friday, September 13, 2024, before 12 Noon:** Deadline to complete extra credit contract in Discussions.
- **Monday, October 14, 2024, before 12 Noon:** Extra credit paper must be turned in to Assignments.

#### **UF POLICIES:**

**Grades and Grade Points:** For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

**Online Course Evaluation Process:** Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course

evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

**Absences and Make-Up Work:** Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: [catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/)

**Academic Honesty:** UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code ([sccr.dso.ufl.edu/process/student-conduct-code/](http://sccr.dso.ufl.edu/process/student-conduct-code/)) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

**Software Use:** All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

### **Campus Helping Resources:**

Health and Wellness

- *U Matter, We Care:* If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) , 352-392-1575, or visit <https://umatter.ufl.edu> to refer or report a concern and a team member will reach out to the student in distress.
- *Counseling and Wellness Center:* Visit <https://counseling.ufl.edu> or call 352-392-1575 for information on crisis services as well as non-crisis services.
- *Student Health Care Center:* Call 352-392-1161 for 24/7 information to help you find the care you need, or visit <https://shcc.ufl.edu>.
- *University Police Department:* Visit <https://police.ufl.edu> or call 352-392-1111 (or 9-1-1 for emergencies).
- *UF Health Shands Emergency Room / Trauma Center:* For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; <https://ufhealth.org/emergency-room-trauma-center> .

Academic Resources

- *E-learning technical support:* Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).
- *Career Connections Center:* Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

- [Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources.
- [Teaching Center](#): Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- [Writing Studio](#): 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- [Student Complaints On-Campus](#): [Visit the Student Honor Code and Student Conduct Code webpage for more information.](#)
- [On-Line Students Complaints](#): [View the Distance Learning Student Complaint Process.](#)

### **Services for Students with Disabilities:**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

**University of Florida Complaints Policy:** The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy. A student who is unsure as to the official responsible for handling his or her particular complaint may contact the Ombuds office or the Dean of Students Office. For complaints that are not satisfactorily resolved at the department level or which seem to be broader than one department, students are encouraged to submit those complaints to one of the following locations: Ombuds: <http://www.ombuds.ufl.edu/> 31 Tigt Hall, 352-392-1308. The purpose of the Ombuds office is to assist students in resolving problems and conflicts that arise in the course of interacting with the University of Florida. By considering problems in an unbiased way, the Ombuds works to achieve a fair resolution and works to protect the rights of all parties involved. Dean of Students Office: <http://www.dso.ufl.edu/> 202 Peabody Hall, 352-392-1261. The Dean of Students Office works with students, faculty, and families to address a broad range of complaints either through directly assisting the student involved to resolve the issue, working with the student to contact the appropriate personnel, or referring the student to resources or offices that can directly address the issue. Follow up is provided to the student until the situation is resolved. Additionally, the University of Florida regulations provide a procedure for filing a formal grievance in Regulation 4.012: <http://regulations.ufl.edu/regulations/uf-4-student-affairs/>.

**U Matter, We Care:** Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor are available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

**ISSUES WITH DISTANCE DELIVERED COURSES:** Each online distance learning program has a process for, and will make every attempt to Resolve, student complaints within its academic and administrative departments at the Program level. See <http://distance.ufl.edu/student-complaints> for more details.

## GETTING HELP:

For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at:

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu)
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

\*\* Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

## GRADING POLICIES:

Grades will be calculated from the total points earned during the semester according to the following table.

|                               | Assignments and Quizzes | Points |
|-------------------------------|-------------------------|--------|
| Quizzes for Exam 1 section    |                         | 20     |
| Biochemistry Treasure Hunt #1 |                         | 10     |
| Exam 1                        |                         | 60     |
| Quizzes for Exam 2 section    |                         | 20     |
| Biochemistry Treasure Hunt #2 |                         | 10     |
| Exam 2                        |                         | 60     |

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| Quizzes for Exam 3 section   | 20         |
| Biochemistry Treasure Hunt #3  | 10         |
| Exam 3   | 60         |
| Quizzes for Exam 4 section   | 20         |
| Biochemistry Treasure Hunt #4  | 10         |
| Exam 4   | 60         |
| Journal Club Project   | 40         |
| <b>Total Points</b>  | <b>400</b> |
| Possible points from Extra Credit Paper                                    | 25         |
| Possible points from Finding the Flawless Diamond Activities               | 4          |
| Points deducted if extra credit paper is requested, but not posted on time | 5          |

The quizzes and Exams are mainly multiple choice and allow an average of 1 minute per question (For example an exam with 30 questions must be completed within 30 minutes).

Assignments are described in detail in documents linked to the course main page on Canvas.

#### **GRADING SCALE:**

| <b>Final Grade</b> | <b>Total Points</b> |
|--------------------|---------------------|
| A                  | 373-400             |
| A-                 | 360-372             |
| B+                 | 348-359             |
| B                  | 333-347             |
| B-                 | 320-332             |
| C+                 | 308-319             |
| C                  | 293-307             |
| C-                 | 280-292             |
| D+                 | 268-279             |
| D                  | 253-267             |
| D-                 | 240-252             |

There will be no curve in this course. **Final grades will be simply calculated from the total accumulated points.**

For information on current UF policies for assigning grade points, see the web page: [catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/).

## COURSE SCHEDULE: FALL 2024 COURSE SCHEDULE

**(0)** Big Exam; **(#)** Required and Graded; **(X)** Optional for Extra Credit

| <u>Week 1</u>                       |  |
|-------------------------------------|--|
| Thursday-<br>August 22,<br>2024     | Introduction to course; – <b>Module 1</b> (Chapter 1 in textbook) - <b>The Foundations of Biochemistry</b><br><b>Module 2</b> (Chapter 3 in textbook) - <b>Amino Acids, Peptides, and Proteins</b> |
| Friday –<br>August 23,<br>2024      | <b>Module 3</b> (Chapter 5 in textbook) - <b>Protein Function</b><br>The deadline for quizzes for Module 1 (Chapter 1) and Module 2 (Chapter 3), are delayed to next Friday due to drop/add.       |
| <u>Week 2</u>                       |  |
| Monday –<br>August 26,<br>2024      | <b>Module 4</b> (Chapter 6 in textbook) – <b>Enzymes</b>   |
| Wednesday-<br>August 28,<br>2024    | <b>Module 5</b> (Chapter 7 in textbook) - <b>Carbohydrates and Glycobiology</b>  |
| Friday –<br>August 30,<br>2024      | <b>(#)Quizzes for Module 1, Module 2, Module 3, Module 4 and Module 5</b> must be completed online before 12 Noon  |
| <u>Week 3</u>                       |  |
| Monday –<br>September<br>02, 2024   | Labor Day Holiday  |
| Wednesday-<br>September<br>04, 2024 | <b>(#)Post Biochemical Treasure #1</b> by 12 noon<br><b>(#)Authors must post journal club article before 3 PM (Step 1)</b>   |
| Thursday –<br>September<br>05, 2024 | <b>(X) Vote for Flawless Diamond #1 by 12 noon (optional for extra credit)</b>   |
| Friday –<br>September<br>06, 2024   | <b>(0) Exam 1</b> on <b>Modules 1, 2, 3, 4, and 5</b> must be completed online via Honorlock between 7:00 AM and 10:00 PM.   |
| <u>Week 4</u>                       |  |
| Monday –<br>September<br>09, 2024   | <b>Module 6</b> (Chapter 8 in textbook) - <b>Nucleotides and Nucleic Acids</b><br><b>(X) Deadline to request an extra credit paper on a topic not listed is noon.</b>                              |

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| Wednesday-<br>September<br>11, 2024          | <b>Module 7</b> (Chapter 9 in textbook) - <b>DNA-Based Information Technologies</b>  |
| <b>Friday –<br/>September<br/>13, 2024</b>   | (#)Quizzes for <b>Module 6</b> and <b>Module 7</b> must be completed online before 12 Noon - <b>(X) Extra Credit Contracts due before 12 Noon.</b><br>(#)Authors must post outline of journal club presentation before 3 PM (Step 2) |
| <b><u>Week 5</u></b>                         |  |
| Monday –<br>September<br>16, 2024            | <b>Module 8</b> (Chapter 10 in textbook) - <b>Lipids</b>   |
| Wednesday-<br>September<br>18, 2024          | <b>Module 9</b> (Chapter 11 in textbook) - <b>Biological Membranes and Transport</b>   |
| <b>Friday –<br/>September<br/>20, 2024</b>   | (#)Quizzes for <b>Module 8</b> and <b>Module 9</b> must be completed online before 12 Noon   |
| <b><u>Week 6</u></b>                         |  |
| Monday –<br>September<br>23, 2024            | <b>Module 10</b> (Chapter 12 in textbook) - <b>Biosignaling</b>  |
| <b>Wednesday-<br/>September<br/>25, 2024</b> | (#)Quiz for <b>Module 10</b> must be completed online before 12 Noon<br>(#)Post <b>Biochemical Treasure #2</b> by 12 noon  |
| <b>Thursday –<br/>September<br/>26, 2024</b> | <b>(X) Vote for Flawless Diamond by 12 noon (optional for extra credit)</b>  |
| <b>Friday –<br/>September<br/>27, 2024</b>   | <b>(0) Exam 2</b> on <b>Modules 6, 7, 8, 9, and 10</b> must be completed online via Honorlock between 7:00 AM and 10:00 PM.  |
| <b><u>Week 7</u></b>                         |  |
| Monday –<br>September<br>30, 2024            | <b>Module 11</b> (Chapter 13 in textbook) - <b>Bioenergetics and Biochemical Reaction Types</b>  |
| <b>Wednesday –<br/>October 02,<br/>2024</b>  | <b>Module 12</b> (Chapter 14 in textbook) - <b>Glycolysis, Gluconeogenesis, and the Pentose Phosphate Pathway</b>  |

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|  | <b>(#)Authors must post a draft of journal club PowerPoint by 3PM (Step 3)</b>  |
| <b>Friday –<br/>October 04,<br/>2024</b>   | <b>(#)Quizzes for Module 11, and Module 12</b> must be completed online before 12 Noon  |
| <b><u>Week 8</u></b>                       |   |
| <b>Monday –<br/>October 07,<br/>2024</b>   | <b>Module 13</b> (Chapter 15 in textbook) - <b>Principles of Metabolic Regulation</b>   |
| <b>Wednesday-<br/>October 09,<br/>2024</b> | <b>Module 14</b> (Chapter 16 in textbook) - <b>The Citric Acid Cycle</b>  |
| <b>Friday –<br/>October 11,<br/>2024</b>   | <b>(#)Quizzes for Module 13 and Module 14</b> must be completed online before 12 Noon<br><b>(#)Authors must post to the assigned discussion Group pairing by 3PM</b> the same file posted in Step 3 (Step 4)                          |
| <b><u>Week 9</u></b>                       |   |
| <b>Monday –<br/>October 14,<br/>2024</b>   | <b>Module 15</b> (Chapter 17 in textbook) - <b>Fatty Acid Catabolism</b><br><b>Module 16</b> (Chapter 18 in textbook) - <b>Amino Acid Oxidation and the Production of Urea</b><br><b>(X) Extra Credit Papers due before 12 Noon</b>   |
| <b>Wednesday-<br/>October 16,<br/>2024</b> | <b>(#)Quizzes for Module 15 and Module 16</b> must be completed online before 12 Noon<br><b>(#)Editors must post to the assignments page and the discussion page</b> a critique of the draft journal club PowerPoint by 3 PM (Step 5) |
| <b>Friday –<br/>October 18,<br/>2024</b>   | <b>Homecoming Holiday</b>   |
| <b><u>Week 10</u></b>                      |   |
| <b>Monday –<br/>October 21,<br/>2024</b>   | <b>Module 17</b> (Chapter 19 in textbook) - <b>Oxidative Phosphorylation and Photophosphorylation</b>   |
| <b>Wednesday-<br/>October 23,<br/>2024</b> | <b>(#)Quiz for Module 17</b> must be completed online before 12 Noon<br><b>Post Biochemical Treasure #3 by 12 noon</b>  |

|                                   |   |
|-----------------------------------|---|
| Thursday -<br>October 24,<br>2024 | <b>(X)</b> Vote for Flawless Diamond by 12 noon (optional for extra credit)   |
| Friday –<br>October 25,<br>2024   | <b>(0)</b> Exam 3 on Modules 11, 12, 13, 14, 15, 16, and 17 must be completed online via Honorlock between 7:00 AM and 10:00 PM.  |
| <b><u>Week 11</u></b>             |   |
| Monday –<br>October 28,<br>2024   | Module 18 (Chapter 21 in textbook) - Lipid Biosynthesis   |
| Wednesday<br>October 30,<br>2024  | Module 19 (Chapter 22 in textbook) - Biosynthesis of Amino Acids, Nucleotides, and Related Molecules  |
| Friday –,<br>November<br>01, 2024 | <b>(#)</b> Quizzes for Module 18, and Module 19 must be completed online before 12 Noon<br><b>(#)</b> Authors must post final PowerPoint presentation for Journal Club by 3 PM (Step 6) |
| <b><u>Week 12</u></b>             |   |
| Monday –<br>November<br>04, 2024  | Module 20 (Chapter 23 in textbook) - Hormonal Regulation and Integration of Mammalian Metabolism<br>Module 21 (Chapter 24 in textbook)- Genes and Chromosomes                           |
| Wednesday<br>November<br>06, 2024 | Module 22 (Chapter 25 in textbook)- DNA Metabolism  |
| Friday –,<br>November<br>08, 2024 | <b>(#)</b> Quizzes for Module 20, Module 21, and Module 22 must be completed online before 12 Noon  |
| <b><u>Week 13</u></b>             |   |
| Monday –<br>November<br>11, 2024  | Honor Veterans  |
| Wednesday<br>November<br>13, 2024 | Module 23 (Chapter 26 in textbook)- RNA Metabolism  |
| Friday –,<br>November<br>15, 2024 | Quizzes for Module 23 must be completed online before 12 Noon   |

| <u>Week 14</u>                                    |   |
|---|---|
| Monday –<br>November<br>18, 2024                  | Module 24 (Chapter 27 in textbook) - Protein Metabolism   |
| Wednesday<br>November<br>20, 2024                 | Module 25 (Chapter 28 in textbook) - Regulation of Gene Expression  |
| Friday –<br>November<br>22, 2024                  | Quizzes for Module 24 and Module 25 must be completed online before 12 Noon   |
| <u>Week 15</u>                                    |   |
| Monday –<br>November<br>25, 2024                  | Post Biochemical Treasure #4 by 12 noon   |
| Wednesday-<br>November<br>27, 2024                | Thanksgiving Holiday  |
| Friday –<br>November<br>29, 2024                  | Thanksgiving Holiday  |
| <u>Week 16</u>                                    |   |
| Monday –<br>December<br>02, 2024                  | (X) Vote for Flawless Diamond by 12 noon (optional for extra credit)  |
| Wednesday-<br>December<br>04, 2024                | (0) Exam 4 on Modules 18, 19, 20, 21, 22, 23, 24, and 25 must be completed online via Honorlock between 7:00 AM and 10:00 PM. |
| <b>No Final Exam – Have a great winter break!</b> |   |