

# Organic Chemistry / Biochemistry II – CHM 3218/5305 Syllabus

Fall 2022: Mon./Wed. 6<sup>th</sup>/7<sup>th</sup> Periods (12:50pm-2:45pm) in Sheridan Auditorium (CCB221)

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**Instructor:** Rebecca Butcher, butcher@chem.ufl.edu; Office location: Leigh Hall 340  
**Teaching Assistant:** Xiang (Jimmy) Li, li.xiang1@chem.ufl.edu

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**Office hours:**

Prof. Butcher – Thurs. and Fri., 7<sup>th</sup> Period 1:55pm and by appointment (schedule by e-mail) in CCB302B.  
Xiang (Jimmy) - TBD

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**Course Description.** This class covers material commonly found in undergraduate biochemistry courses, with an emphasis on application of concepts from organic chemistry. Topics will include amino acids and proteins, enzyme structure, mechanisms and kinetics, primary metabolism, and nucleic acid structure and metabolism.

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**Prerequisites.** Students should have taken and passed either CHM 2210 and 2211 or CHM 3217.

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**Textbook:** Principles of Biochemistry by David Nelson and Michael Cox, 7th Edition, WH Freeman and Company. Handouts, recommended practice problems, and additional course material will be posted on the Canvas site.

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**Lecture schedule.** A tentative lecture schedule with recommended reading is posted on the Canvas site. However, as the semester progresses, this schedule may be updated depending on how quickly we progress through the course material. Please make sure you have the most up-to-date version by checking the date in the file name of the lecture schedule.

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**Exams:**

|            |                               |
|------------|-------------------------------|
| Exam #1    | Sept. 26                      |
| Exam #2    | Oct. 26                       |
| Exam #3    | Nov. 28                       |
| Final Exam | Wed. Dec. 14 10-12am, CCB 221 |

All exams are held at our regular class time in our regular classroom CCB221. Out of the three regular exams, the lowest grade will be dropped, and the remaining two exams will each count 25% of your total grade. The final exam (which cannot be dropped) will be worth 25%. The exams will emphasize lecture material and problem sets. Much of the lecture material is not in the textbook. So, come to every class and take detailed notes! The final exam will be cumulative, but will concentrate (~30-40%) on material from after the third exam.

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**Absences:** If you must miss an exam for one of the following approved reasons( <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#absencetext>), please notify me as early as possible, and accommodations will be made.

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**Problem sets:** Problem sets will be posted each week after Wednesday's lecture and will be due on Canvas that Sunday at midnight. For each problem set, you will receive half of the points for attempting all questions, and you will receive the other half for answering correctly a particular question chosen at random for that problem set. Problem sets will be worth 20% of your total grade.

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**Participation:** You will be awarded a participation grade for in-class group problem solving worth 5% of your grade.

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**Grading:**

|                         |          |
|-------------------------|----------|
| Best two in-term exams: | 25% each |
| Final exam:             | 25%      |
| Problem sets:           | 20%      |
| Participation:          | 5%       |
| Total:                  | 100%     |

Course grades will be assigned according to the following cut offs: A: 90-100%, A-: 86-89%, B+: 82-85%, B: 78-81%, B-: 74-77%, C+: 70-73, C: 66-69%, C-: 62-65%, D+: 58-61%, D: 54-57% D-: 51-53%, E≤50%. For information on UF's grading policy, see: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

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**Accommodations for Students with Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Contact the Disability Resources Center (<http://www.dso.ufl.edu/drc/>) for information about available resources for students with disabilities.

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**Academic honesty:** I expect each of you to follow the Student Honor Code, available on the web (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>)

You are expected to:

- uphold the highest standards of academic integrity in the student's own work,
- refuse to tolerate violations of academic integrity in the University community,
- foster a high sense of integrity and social responsibility on the part of the University community.

Violations of the Honor Code will be reported to the Dean of Students, and may result in failure of the assignment in question and/or the course.

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**Course Evaluations:** 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/>.

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**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 online 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 is 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 911.

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**Distribution of course materials.** Lecture materials, handouts, and problem sets used in this course may not be distributed to outside parties without Prof. Butcher's permission.

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**Tentative Lecture Schedule:**

| Date     | Lecture Topic  |
|----------|--|
| Aug. 24  | Review of organic chemistry principles; Introduction to biomolecules |
| Aug. 29  | Stereochemistry; Thermodynamics/kinetics; Abiotic synthesis          |
| Aug. 31  | Non-bonding interactions   |
| Sept. 7  | Acid/base equilibria   |
| Sept. 12 | Amino acids and proteins   |
| Sept. 14 | Protein sequencing; Protein synthesis; Protein structure             |
| Sept. 19 |  |
| Sept. 21 | DNA structure; DNA synthesis; DNA sequencing                         |
| Sept. 26 | <b>Exam #1, Period 6-7, CCB221</b>                                   |
| Sept. 28 | RNA structure  |
| Oct. 3   | Introduction to enzymes, proteases, transpeptidases                  |
| Oct. 5   |  |
| Oct. 10  | Enzyme kinetics and inhibitors; Enzyme inhibitors                    |
| Oct. 12  | Carbohydrates, Bioenergetics, ATP                                    |
| Oct. 17  | Glycolysis I   |
| Oct. 19  | Glycolysis II; Fates of pyruvate                                     |
| Oct. 24  | Citric acid cycle I  |
| Oct. 26  | <b>Exam #2, Period 6-7, CCB221</b>                                   |
| Oct. 31  | Citric acid cycle II   |
| Nov. 2   | Gluconeogenesis, Pentose phosphate cycle                             |
| Nov. 7   | Fatty acid catabolism  |
| Nov. 9   | Amino acid catabolism  |
| Nov. 14  | Oxidative phosphorylation  |
| Nov. 16  | Lipid biosynthesis   |
| Nov. 21  | Amino acid biosynthesis  |
| Nov. 28  | <b>Exam #3, Period 6-7, CCB221</b>                                   |
| Nov.30   | Nucleotide biosynthesis  |
| Dec. 5   | DNA replication; RNA transcription and processing                    |
| Dec. 7   | Protein translation  |
| Dec. 14  | <b>Final Exam, Wednesday @ 10-12am, CCB 221</b>                      |