

# **BC401: Comprehensive Biochemistry I**

## ***The Structure of Biological Macromolecules***

**M, W, F      11:00-11:50 pm      Clark A203**

### **Instructor Information**

Instructor: Dr. Jeffrey Hansen                      Office: 381 MRB

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Instructor: Dr. Sarah Swygert                      Office: 377 MRB

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### **TA Information**

GTA: Amanda Kuerzi                                      Office: 381 MRB

Email: [Amanda.Kuerzi@colostate.edu](mailto:Amanda.Kuerzi@colostate.edu)

### **Communication**

- The best way to get ahold of us is after class or via email. Responses to emails will be provided as soon as possible but may take up to a day.

### **Office Hours**

- We will be available after most classes from 12 noon
- For appointments at other times, please email us. We will get back to you to schedule up an office appointment or Teams call.

### **Course Description**

- BC401 covers the structure of nucleic acids and proteins at an advanced level. Section 1 goes through the fundamentals needed to move on: thermodynamics, water, the hydrophobic effect, and non-covalent interactions.
- Section 2 addresses key structural aspects of DNA and RNA.
- Section 3 covers the fundamentals of protein architecture: primary, secondary, and tertiary structure.

- Section 4 focuses on protein structure/function relationships and uses specific proteins as examples of the concepts illustrated.
- Section 5 is dedicated to macromolecular assemblages such as ATP synthase and the nucleosome.

## Objectives

Upon the completion of BC 401, a successful student will be able to examine and evaluate:

1. The non-covalent interactions found in nucleic acids and proteins.
2. The structure of nucleic acids.
3. The structure and dynamics of proteins.
4. The molecular architecture of macromolecular assemblages.

## Course Schedule

- The **Course Schedule** is a 3-page document posted under the **Course Information** module in Canvas.
- The Course Schedule lists the dates of all the lectures, quizzes, and other assignments.

## Course Materials

- A textbook is not used.
- Lecture Videos are posted in Canvas under the ECHO360 tab. Each video is an Echo360 recording of what happened in the classroom that day. PDFs of the PowerPoint slides used in each lecture are posted under the weekly **Canvas Module**. These slides are the **source of material used for the quizzes**.
- The class has an unparalleled learning tool in the form of Jsmol Tutorials. These tutorials combine the internet-accessibility, 3-D graphics, and user manipulability of the program, Jsmol, with topics and text that explain what you are looking at. *The Jsmol tutorials offer a visual, interactive guided tour through structural biochemistry* that can be accessed from your computer, tablet, or phone. Almost every lecture has an accompanying Jsmol tutorial. You are expected to view these tutorials frequently to supplement the lecture materials.
- Many of the figures used in the lectures are derived from the Jsmol tutorials, which can be found here: <https://bc401.bmb.colostate.edu/>

## Course Policies

### ***Excused Absences/Makeups***

To be considered for make-up assignments, you must notify me by email that you will be missing the assignment before the assignment is due. Excuses received after the assignment due date will not be considered.

### ***Assignments***

| Assignment              | Planned Grade Points* | Grade Percentage |
|-------------------------|-----------------------|------------------|
| 11 Quizzes              | 220                   | 37%              |
| 3 Problem-solving Exams | 240                   | 40%              |
| Database Exercise       | 40                    | 7%               |
| Final <b>Project</b>    | 100                   | 17%              |
| <b>Total:</b>           | 600                   | <b>100%</b>      |

Note: \*actual points may vary a little

### ***Grading***

Grading follows the "Straight scale":

90-100% = A

80-89.9% = B

70-79.9% = C

60-69.9% = D

0-59.9% = F

Note: +/- grades may be assigned.

### **Accommodations**

- If you think you will need accommodations in this class, please contact me to discuss your individual needs. I also will address the accommodations policy in class on the first day.

- Any accommodation must be discussed in a timely manner **BEFORE** the assignment deadline.
- A verifying memo from [Student Disability Center](#) may be required before any accommodation is provided.

## Academic Integrity & CSU Honor Pledge

- This course will adhere to the CSU Academic Integrity Policies and Guiding Principles as found in the General Catalog and the [Student Conduct](#).
- *Academic integrity lies at the core of our common goal:* to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, I will **expect** that you affirm the CSU Honor Pledge as part of completing your work in this course.
- Adhering to Academic Integrity ***will be essential*** during the problem-solving exams.
- Further information about Academic Integrity is available at [CSU's Academic Integrity](#).

## Canvas Information & Technical Support

- Canvas is the where course content, grades, and communication will reside for this course.
- The [Technical Requirements](#) page identifies the browsers, operating systems, and plugins that work best with Canvas. If you are new to Canvas quickly review the [Canvas Student Orientation](#) materials.