General Biochemistry I_Chem5810_2013_Fall_Syllabus

Prerequisites
Full year of General (college) Chemistry, two semesters of Organic Chemistry, and their prerequisites, in particular College Algebra

Instructor contact information
Instructor: Xiaojun Ren
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Office: Science 4135; Lab: Science 4139
Office Phone: 303-556-5659
Office hours: Tues/Thurs 3:30-5:00 pm or by appointment

Course information
Classroom: Science 1111
Days: Tues/Thurs
Times: 2:00PM - 3:15PM

Textbook

Course overview
The course of general biochemistry (Chem5810) is designed to teach the chemical and physical properties of cellular components such as proteins, carbohydrates, lipids, and other biomolecules while relating them back to the context of physiological conditions of living organisms and living matters. The course will cover the chemical and physical properties of proteins, carbohydrates and lipids. We will examine chemical and physical properties of enzyme and enzyme-catalyzed reactions. We will also relate the chemical and physical properties of biomolecules to biochemical reactions and the signaling pathways. After completing the course, students should have attained knowledge to explain real-life situations at molecular level.

Course Objective
After completing the course, you will be able to:
(1) Draw, describe, and classify the chemical properties of biological macromolecules.
(2) Explain how biological macromolecules fold into specific shape/structure.
(3) Describe quantitatively and qualitatively interactions among biomolecules.
(4) Define and calculate important constants and parameters for enzymatic reactions.
(5) Analyze and critique scientific research papers published.
(6) Present scientific research papers published.
(7) Explain real-life situations at molecular basis.
Grading
Grades will be based on a total of 600 points as detailed below.

<table>
<thead>
<tr>
<th>Points</th>
<th>Letter grade</th>
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<tbody>
<tr>
<td>540-600</td>
<td>A</td>
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<tr>
<td>510-539</td>
<td>A-</td>
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<tr>
<td>480-509</td>
<td>B+</td>
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<tr>
<td>450-479</td>
<td>B</td>
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<tr>
<td>420-449</td>
<td>B-</td>
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<tr>
<td>390-419</td>
<td>C+</td>
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<tr>
<td>360-389</td>
<td>C</td>
</tr>
<tr>
<td>330-359</td>
<td>C-</td>
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</tbody>
</table>

The above points and the corresponding letter grade are the “guaranteed” cutoffs. However, if overall grade distribution is downwards, the course will be graded based on a distribution of the total points accumulated.

Extra credits
A maximum of 30 points in total is possible. Answering question in class: 1 point. Asking relevant question in class or office hours: 1 point. I catch you talking with group members about relevant science: 1 point.

Regrading policy
After an exam is graded and returned to you, the answer key will be posted on Canvas. If you think you deserve better grade on a certain question and would like me to regrade your exam, I will be happy to correct any mistakes or explain scoring.

Class participation and quiz grading
After the first week, a maximum of 3 points per week possible, except during exam weeks and during project work. Completed breakout/quiz: 2 points. Attendance: 1 point/day.
Homework assignments
Doing homework is essential for your success in this class. Homework will be collected preceding the class lecture. Each will be graded on a scale of 0 to 5 based on completeness and effort. In addition, some exam problems will resemble homework problems. Late homework will lose 5% of their potential value for each day.

Exam
Quiz and exam questions will be based on the material covered in lectures and assigned readings. Each exam will focus on the materials covered by the lectures given in this time period, but may draw on materials from earlier exam periods, especially those related to the materials covered in this time period. All students are expected to take the quizzes and exams at the scheduled time. If an extreme situation arises and you must be absent from a quiz or exam, please contact me by email or phone as soon as possible to figure out a resolution. Only if you can provide a written note to that situation, you will be allowed to take a make-up exam. To preserve the academic integrity of the course, I reserve the right to alter the content and/or format of the original exam when creating a make-up exam. Please note that the difficulty of the make-up exam may be different from the original exam. If you miss an exam without making any prearrangements, you will receive 0 (zero) points for that exam.

Research paper report and presentation
Students will be grouped for research paper report and presentation. Groups are required to analyze, critique, and present a research publication (literature) on the topics that have been studied. Research publication (literature) will be assigned by instructor. The research paper report will review the overall goals of the selected research publication, explain the model systems and methods used to interpret the results and offer alternative explanations for the results. Instructions for the format and content of report will be posted on the Canvas site. You may resubmit a corrected version of the reports within one week of when it is returned to you. Resubmitted reports will be re-graded and the two grades for the report will be averaged. Late reports will lose 5% of their potential value for each day. Late resubmits will not be accepted. Each individual’s contribution to the group effort must be documented.

Presentation for the research publication (literature) you have analyzed should be prepared to last 10 minutes, plus 5-10 minutes for questions and discussions. In most cases you will not be able to present the entire paper – select the most important measurements and explain how they were done and why they are important. Grading rubrics will be distributed during the course. Each individual’s contribution to the group effort must be documented.

End-of-semester project
Each group will prepare a written report and presentation summarizing recent scientific research for a chosen topic in Signaling Pathways. Topics must be approved by instructor. Each individual’s contribution to the group effort must be documented. Details of the assignment will be provided after Exam 2.
Team (group) work
Scientific research is to explore the unknown of the world by collaborative efforts of scientists from different disciplines. Through collaboration and forming teams, researchers from different disciplines can move beyond disciplines and accomplish more. The teaming research reflects in today's journal publication. Most scientific research papers have more than five authors, and some have more than twenty contributing people. To provide a more authentic experience of actual scientific research, research paper reports, presentations, problems during class, and end-of-semester projects will be done in groups. You are encouraged to meet with other students outside of class for studying and doing homework problems; however, each person must turn in his/her own work so the Academic Honesty policy still applies (see below).
<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topic</th>
<th>Reading/Materials</th>
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<tbody>
<tr>
<td>Aug. 20</td>
<td></td>
<td>Syllabus</td>
<td>Syllabus</td>
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<tr>
<td>Aug. 22</td>
<td>1</td>
<td>Introduction biochemistry/ Chemical foundation</td>
<td>Ch.1.2 (p11-20)</td>
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<td>Aug. 27</td>
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<td>Physical foundation/Thermodynamics and Equilibrium</td>
<td>Ch.1.3 (p20-29)</td>
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<td>Aug. 29</td>
<td>2</td>
<td>Water/Noncovalent Interactions</td>
<td>Ch. 2.1 (p51-55)</td>
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<td>Sept. 3</td>
<td></td>
<td>Colligative properties/Acids and Bases</td>
<td>Ch. 2.1, Ch2.2 and Ch2.3 (p55-69)</td>
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<tr>
<td>Sept. 5</td>
<td>3</td>
<td>Fundamental concepts review</td>
<td></td>
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<tr>
<td>Sept. 12</td>
<td></td>
<td>Exam #1</td>
<td></td>
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<tr>
<td>Sept. 17</td>
<td>4</td>
<td>Amino acids</td>
<td>Ch. 3.1 (p75-85)</td>
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<tr>
<td>Sept. 19</td>
<td></td>
<td>Protein and Protein structure</td>
<td>Ch. 3.2 (p85-87) and Ch. 4</td>
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<td>Sept. 24</td>
<td>5</td>
<td>Protein and Protein structure/Web-based protein information</td>
<td>Ch. 4 and Require computer with wireless access</td>
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<td>Sept. 26</td>
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<td>Protein purification and identification</td>
<td>Ch. 3.3-3.4 (89-104)</td>
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<td>Oct. 1</td>
<td>6</td>
<td>Protein function</td>
<td>Ch. 5.1-5.2 (p157-169 and p174-179)</td>
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<td>Oct. 3</td>
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<td>Student presentation</td>
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<td>Oct. 8</td>
<td>7</td>
<td>Student presentation</td>
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<td>Oct. 10</td>
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<td>Review proteins</td>
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<td>Oct. 15</td>
<td>8</td>
<td>Exam #2</td>
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<td>Oct. 17</td>
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<td>Enzymes</td>
<td>Ch. 6.1-6.3</td>
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<tr>
<td>Oct. 22</td>
<td>9</td>
<td>Kinetics</td>
<td>Ch. 6.1-6.3</td>
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<tr>
<td>Oct. 24</td>
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<td>Review enzyme and kinetics</td>
<td>Ch. 6.1-6.3</td>
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<td>Oct. 29</td>
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<td>Carbohydrates</td>
<td>Ch.7.1-7.2 (p243-259)</td>
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<td>Oct. 31</td>
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<td>Lipids</td>
<td>Ch. 10.1-10.2 (p357-370)</td>
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<td>Nov. 5</td>
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<td>Student presentation</td>
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<td>Nov. 7</td>
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<td>Student presentation</td>
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<td>Nov. 12</td>
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<td>Review enzymes, lipids and carbohydrates</td>
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<td>Nov. 14</td>
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<td>Exam #3</td>
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<td>Nov. 19</td>
<td>13</td>
<td>Biological membrane and transport</td>
<td>Ch.11</td>
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<td>Nov. 21</td>
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<td>Signaling (Project)</td>
<td>Ch.12</td>
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<td>Nov. 26</td>
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<td>Nov. 28</td>
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<td>Dec. 3</td>
<td>14</td>
<td>Signaling (Project)</td>
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<td>Dec. 5</td>
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<td>Student presentation</td>
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<td>15</td>
<td>Student presentation</td>
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<td>Dec. 12</td>
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Policies and administrative information

**Enrollment:** It is each student’s responsibility to confirm class enrollment. It is very difficult to add a student to a class after the census date, so it is strongly recommended that all students check their own enrollment status before that date.

**Accessibility:** The University of Colorado Denver is committed to providing reasonable accommodation and access to programs and services to persons with disabilities. Students with disabilities who want academic accommodations must register with Disability Resources and Services (DRS), 2514 North Classroom Building, 303-556-3450, TTY 303-556-4766, FAX 303-556-2074. Their staff will assist in determining reasonable accommodations as well as coordinating the approved accommodations. I will be happy to provide approved accommodations, once you provide me with a copy of DRS’s letter.

**Academic Honesty:** Students are expected to know, understand, and comply with the ethical standards of the University. In addition, students have an obligation to inform the appropriate official of any acts of academic dishonesty by other students of the University. Academic dishonesty is defined as a student’s use of unauthorized assistance with intent to deceive an instructor or other such person who may be assigned to evaluate the student’s work in meeting course and degree requirements. Examples of academic dishonesty include, but are not limited to, the following:

- **Plagiarism:** Plagiarism is the use of another person’s distinctive ideas or words without acknowledgment. The incorporation of another person’s work into one’s own required appropriate identification and acknowledgment, regardless of the means of appropriation. The following are considered to be forms of plagiarism when the source is not noted:
  - Word-for-word copying of another person’s ideas or words
  - The mosaic (the interspersing of one’s own words here and there while, in essence, copying another’s work)
  - The paraphrase (the rewriting of another’s work, yet still using their fundamental idea or theory)
  - Fabrication of references (inventing or counterfeiting sources)
  - Submission of another’s work as one’s own
  - Neglecting quotation marks on material that is otherwise acknowledged (*Note: in science, previous work is very rarely quoted verbatim. Proper style for a scientific paper is to paraphrase or summarize previous work and cite it*).

- **Cheating:** Cheating involves the possession, communication, or use of information, materials, notes, study aids or other devices not authorized by the instructor in an academic exercise, or communication with another person during such an exercise. Example of cheating are:
  - Copying from another’s paper or receiving unauthorized assistance from another during an academic exercise or in the submission of academic material
Using a calculator when its use has been disallowed

Collaborating with another student or students during an academic exercise without the consent of the instructor

Fabrication and Falsification: Fabrication involves inventing or counterfeiting information, i.e., creating results not obtained in a study or laboratory experiment. Falsification, on the other hand, involves the deliberate alteration of changing of results to suit one’s needs in an experiment or other academic exercise.

Multiple Submissions: This is the submission of academic work for which academic credit has already been earned, when such submission is made without instructor authorization.

Misuse of Academic Materials: The misuse of academic materials includes, but is not limited to, the following:

- Stealing or destroying library or reference materials or computer programs.
- Stealing or destroying another student’s notes or materials, or having such materials in one’s possession without the owner’s permission.
- Receiving assistance in locating or using sources of information in an assignment when such assistance has been forbidden by the instructor.
- Illegitimate possession, disposition, or use of examinations or answer keys to examinations.
- Unauthorized alteration, forgery, or falsification.
- Unauthorized sale or purchase of examinations, papers, or assignments.

Complicity in Academic Dishonesty: Complicity involves knowingly contributing to another’s acts of academic dishonesty.

Students are required to know the academic honesty policy of UCD. These policies are available at http://catalog.ucdenver.edu/content.php?catoid=6&navoid=530. We will strive to make this class a collaborative learning environment, but when it comes to the quizzes and exams, you must be held individually accountable for your knowledge and ability.

ACADEMIC DISHONESTY WILL NOT BE TOLERATED & WILL RESULT IN AN F.

At a minimum, academic honesty violations in this class will result in a grade reduction (most likely an F grade) for the quiz or exam in question. The maximum penalty is an F grade in the course. Violations may also be reported to the UCD Academic Ethics Committee, which determines if a violation should be included in a student’s permanent record.

Incomplete grades: CLAS policy states that incomplete grades are not granted for low academic performance. To be eligible for an Incomplete, students must:

- Successfully complete a minimum of 75% of the course.
- Have special circumstances beyond their control that preclude them from attending class and completing graded assignments.
• Make arrangements to complete missing assignments with the original instructor. Verification of special circumstances is required.
The following policies pertain to all degree students in the College of Liberal Arts and Sciences (CLAS).

- **Schedule verification**: It is each student’s responsibility to verify online that his/her official registration is correct: verify before classes begin and prior to the drop/add deadline. Failure to verify schedule accuracy is not sufficient reason to justify a late add or drop.

- **E-mail**: Students must activate and regularly check their official student e-mail account for CU Denver business: [http://www.ucdenver.edu/student-services/Pages/WebMail.aspx](http://www.ucdenver.edu/student-services/Pages/WebMail.aspx). Those who forward email must check CU Denver e-mail regularly for messages not automatically forwarded.

- **Waitlists**:  
  - Students are not automatically notified if they are added to a class from a waitlist.  
  - Students are not automatically dropped from a class if they never attended, stopped attending, or do not make tuition payments.  
  - Waitlists are purged after the 1st week of classes, after which a paper Schedule Adjustment Form (SAF or drop/add form) is required. It is the student’s responsibility to get the form (online or at the Advising Office, NC 4002), have it signed, deliver it to the Registrar (Annex 100) or the Student Services Center (NC 1003), and verify her/his schedule online.

- **Late adds** (after 4 September) will be approved only when circumstances surrounding the late add are beyond the student’s control. This will require a written petition and verifiable documentation. Petition forms are available in NC 4002. The signature of a faculty member on a SAF does not guarantee that a late add petition will be approved.

- **Late drops** (after 28 October) will be approved only when circumstances surrounding the late drop have arisen after the published drop deadline and are beyond the student’s control. This will require a written petition and verifiable documentation. The signature of a faculty member does not guarantee that a late drop petition will be approved.

- **Tuition**: Students are responsible for completing arrangements with financial aid, family, scholarships, etc. to pay their tuition prior to Census Date (4 September). Students who drop after that date are (1) financially responsible for tuition and fees, (2) academically responsible and will receive a "W" grade, and (3) are ineligible for a refund of COF hours or tuition.

- **Graduation**:  
  - Undergraduate students wishing to graduate in Fall 2013 must complete the online Graduation Application form, in the UCD Access Portal, and meet with their academic advisor to obtain a graduation application. This application must be submitted by Census Date (4 September). You can obtain an
application **only after** meeting with your advisor. There are no exceptions to this policy.

- Graduate students wishing to graduate in Fall semester 2013 must complete the online Graduation Application form, in the UCD Access Portal, and have a Request for Admissions to Candidacy on file with the CU Denver Graduate School (LSC 1251) no later than 5 PM, September 4, 2013.

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**Important Dates and Deadlines**

- **August 18, 2013:** Last day to withdraw from all classes via UCDAccess and receive a refund of the $200 advance payment and all tuition.
- **August 19, 2013:** First day of classes.
- **August 25, 2013:** Last day to add or waitlist classes using UCDAccess. After this date, a Schedule Adjustment Form (SAF) is required to change, add, or drop.
- **August 26, 2013:** Last day to drop without a $100 drop charge. No adds permitted on this day.
- **August 27 - September 4, 2013:**
  - UCDAccess registration is closed; registration now requires a SAF with faculty signature.
  - Verify your registration via UCDAccess. You are not registered for a course unless your name appears on the official roster; conversely, your name may have been added automatically from the waitlist without notification, which means that you will be held responsible.
- **September 2, 2013:** Labor Day (no classes; campus closed).
- **September 4, 2013: Census date.**
  - **9/4/13, 5 PM:** Last day to add structured courses without a written petition for a late add. This is an absolute deadline and is treated as such. This does not apply to independent studies, internships, project hours, thesis hours, dissertation hours, and modular courses.
  - **9/4/13, 5 PM:** Last day to drop a course or completely withdraw from Fall 2013 using a SAF and still receive a tuition refund, minus the drop fee. After this date, tuition is forfeited and a "W" will appear on the transcript. This includes section changes. This is an absolute deadline.
  - **9/4/13, 5 PM:** Last day to request pass/fail or no-credit option for a course.
  - **9/4/13, 5 PM:** Last day for a graduate student to register for a Candidate for Degree.
  - **9/4/13, 5 PM:** Last day for a Ph.D. student to petition for a reduction in hours.
  - **9/4/13, 5 PM:** Last day to apply for Fall 2013 graduation. If an undergraduate, you must make an appointment and see your academic advisor to apply. If a
graduate student, you must complete the Intent to Graduate and Candidate for Degree forms.

- **September 16-27, 2013**: Faculty can use the Early Alert system.
- **October 28, 2013, 5 PM**: Last day for non-CLAS students to drop or withdraw without a petition and special approval from the academic dean. After this date, a dean’s signature is required.
- **November 11, 2013, 5 PM**: Last day for CLAS students to drop or withdraw with signatures from the faculty and dean but without a full petition. After this date, all schedule changes require a full petition. Petitions are available in NC 4002 for undergraduates and in the CU Denver Graduate School offices for graduate students.
- **November 25-December 1, 2013**: Fall break (no classes; campus open).
- **November 28**: Thanksgiving Day Holiday (no classes; campus closed). Be thankful.
- **December 9-14, 2013**: Finals Week. No schedule changes will be granted once finals week has started—there are no exceptions to this policy. Commencement is December 14.
- **December 19, 2013**: Due date for faculty submission of grades (tentative).
- **December 23, 2013**: Fall final grades available on UCD Access (tentative).