

Professor: Penny Beuning **Office:** 006 Hurtig Hall **Phone:** x2865
Email: beuning@neu.edu

Lectures: Monday **Time:** 6:00 - 8:30 PM **Location:** 129 Hurtig

Office Hours: Wednesday 2:30-5:30 PM, other times by appointment

Course credit value: 3 SH

Pre-requisites for U621 (Key # 05049): General Chemistry I and II for Majors with Labs (U217/U218/U220/U221), Organic Chemistry I and II with Labs (U315/U316/U317/U318), Bioanalytical Chemistry (U331/U332), Physical Chemistry I and II with Labs (U401/U402/U403/U404), Instrumental Methods of Analysis (U521/U522) and have at least junior standing

Pre-requisites for G221 (Key # 45538): undergraduate organic and physical chemistry

Laboratory U622 (Key # 07108): Co-registration for the laboratory is required for students enrolled in U621. Laboratory sessions will be held Tuesdays 8-11:30 AM in 441 Hurtig. Students are responsible for meeting the expectations in the separate syllabus.

Textbook (available at the bookstore):

Lehninger Principles of Biochemistry, by David L. Nelson, Michael M. Cox, Fifth Edition
Note: The above book and others that may be useful have been placed on reserve in Snell Library.

Course Description:

In this course, you will learn:

- Structures and functions of biological polymers
- Chemical reactions carried out in living organisms
- Application of the tools of chemistry to biological systems and problems

Background information:

Attendance is strongly encouraged and attendance will be recorded. Part of the final grade will be based on class participation and in-class exercises. Some exam materials will be based on in-class discussions and presentations. There will be no make-up work accepted for in-class exercises. There will be no make-up exams. Late homework will not be accepted.

Grading:

- | | |
|---------------------------------|-------------------------------|
| • Homework 85 points | Determination of final grade: |
| • Exams (x3) 100 points each | ≥90% A range |
| • Class Participation 50 points | ≥80%; <90% B range |
| TOTAL 500 pts | ≥70%; <80% C range |
| | <70% D-F range |

For G221, literature summaries will be worth 65 points (25 points per report; 15 points for the presentation.

For U621/U622 laboratory will be worth 65 points

Homework: Homework will not be graded but you will receive credit for completing it. Thoughtful completion of homework is strongly encouraged as it will help you prepare for class and keep up with the material.

Literature Summaries: Each student enrolled in G221 will turn in two summaries of the primary research literature, beginning September 29. The schedule will be posted on Blackboard. Each report must be a concise summary no more than one page in length of one paper from the primary research literature (or two papers if the case is especially compelling). There should be a 1-2 paragraph summary of the paper, including: the goals and/or justification of the work, notable techniques, results, and major conclusions. You may include a figure or two. At the top of the page, give the complete literature citation of the paper, followed by the summary and any figures. Include literature citations for any other source material you used. A MS Word or PDF file must be turned in using TurnItIn on Blackboard or emailed to the instructor. Each student will be expected to present a brief summary (~3 min) of a report once during the semester. Summaries will be posted on Blackboard and exam questions may be drawn from the reports.

Incompletes: It is the Chemistry department's policy that incompletes may only be awarded to students who are seriously ill, passing at the time of illness, and who are unable to complete the coursework remaining at the time of illness. Incompletes can only be granted with an agreement to complete the course signed by both instructor and student before final grades are submitted.

Useful Dates to Keep in Mind:

Last day to drop without a W grade – Sept 26

Last day to drop with a W grade – Nov 21

Final Exams – begin December 12

Academic Honesty: Northeastern University is committed to the principles of intellectual honesty and integrity. All members of the Northeastern community are expected to maintain complete honesty in all academic work, presenting only that which is their own work in tests and assignments. Academic dishonesty is outlined in the Undergraduate Student Handbook and at <http://www.neu.edu/osccr/academichonesty.html>.

Students with Disabilities: Students needing accommodations must register with the Disability Resource Center and open a file. The Disability Resource Center is located at 20 Dodge Hall, 617-373-2675.

Tentative Course Schedule (no class on Oct 13):

Date	Topics/Reading	Homework Due
Week 1 September 15	Introduction to the Course, Fundamentals: Thermodynamics, Water, pH	
Week 2 September 22	Fundamentals, Amino Acids, Proteins Ch 1, 2, 3	Ch 1: 2, 11, 13
Week 3 September 29	Proteins Ch 3, 4, 5	Ch 2: 2, 3, 4, 28 Ch 3: 2, 8, 12
Week 4 October 6	Proteins and Enzymes Ch 5, 6	Ch 4: 3, 8, 12 Ch 5: 1, 4, 9 Ch 6: 2, 3, 10
October 13	No class, Columbus Day Holiday	
Week 6 October 20	Carbohydrates and Lipids Ch 7, 10	EXAM 1 (through Ch 6)
Week 7 October 27	Membranes and transport Ch 11, 12	Ch 7: 4, 21, 24 Ch 10: 2, 9, 21 Ch 11: 6, 15, 22
Week 8 November 3	Bioenergetics and Metabolism Ch 13, 14, 15	Ch 12: 6, 7, 11 Ch 13: 2, 6, 17 <i>or</i> 18 Ch 14: 6, 14, 25
Week 9 November 10	Metabolism Ch 16, 17, 18, 19	Ch 15: 2, 4; Ch 16: 5 a-c, 19 Ch 17: 2, 7; Ch 18: 2, 6, 12 Ch 19: 2, 6
Week 10 November 17	Nucleic acids, Genetic Information Ch 8, 24	EXAM 2 (Ch 7, 10-19)
Week 11 November 24	DNA and RNA Metabolism Ch 25, 26	Ch 8: 1, 5, 6, 11 Ch 24: 2, 3, 4
Week 12 December 1	Gene Expression, Protein Synthesis Ch 27, 28	Ch 25: 1, 3, 9, 12 Ch 26: 2, 6, 9
Week 13 December 8	Nucleic acid-protein interactions, nucleic acids technologies, wrap-up Ch 28, 9	Ch 27: 2, 11, 13 Ch 28: 1, 4, 5 Ch 9: 3, 6, 13
	Comprehensive Final Exam	