

**COURSE INFORMATION****Credit Hours:** 4

**Course Description:** Basic molecular and cellular processes. Structures of biomolecules. Energetics: enzymes, photosynthesis, respiration. Genetic control: chromatin, DNA replication, RNA transcription and regulation, protein synthesis. Cell functions, including: protein secretion; cell membrane structure; transport and surface interactions; cell cycle; cell motility; cell growth; cell origins. Lecture and laboratory.

**Course Prerequisites:** BIO-201 minimum grade of C or BIOL-102 minimum grade of C and BIO-150 minimum grade of C and CHEM-211 minimum grade of C.

**Course meetings and Locations:**Lecture: Monday 11:30 am – 2:10 pm, **BBH-354**Lab: Wednesday 11:30 am – 2:10 pm, **BBH-354****FACULTY INFORMATION****Instructor:** Dr. Elyse Bolterstein                      **Office Location:** BBH-352A**E-mail:** [e-bolterstein@neu.edu](mailto:e-bolterstein@neu.edu)                      **Phone Extension:** 773-442-5742**Office Hours:** Mon. 3:00-4:15pm, Wed. 9:30-10:45am, Thurs. 10:00-11:30am or by appointment

E-mail is the easiest and fastest way to contact me. Please plan ahead and allow time for a reply. On regular business days, I can usually reply within 24 hours. On weekends and holidays, I may need to reply on the next business day. **You must use your NEIU e-mail for all e-mail communication. Include a subject or it may go to junk mail.**

**COURSE MATERIALS****Required Texts / Materials:****Required textbook:**

Alberts, Bruce *et al.* Essential Cell Biology, 4<sup>th</sup> edition. New York: Garland Science, 2013. (ISBN 978-0815344544)

**Required laboratory supplies:**

Lab notebook: Chemistry – Spiral Side Bound 100 set. Hayden McNeil (ISBN 978-1-4292-2454-3) or equivalent

*Note:* You can use a notebook from a previous class if it is more than half empty.

**Recommended textbook:**

Alberts, Bruce *et al.* Molecular Biology of the Cell. 4<sup>th</sup> edition. New York: Garland Science, 2002. (ISBN 978-0815332183).

Available online:

<https://www.ncbi.nlm.nih.gov/books/NBK21054/?term=molecular%20biology%20of%20the%20cell%20alberts>

## COURSE OBJECTIVES / STUDENT LEARNING OUTCOMES

- Develop a basic understanding of the structures, metabolism and biochemistry that allows a cell to function.
- Understand how cellular processes interact.
- Relate cellular processes to what happens in disease, aging and development.
- To obtain firsthand experience with equipment and basic techniques commonly used in cell biology research.
- Gain experience utilizing the Internet for scientific information.
- Develop skills necessary to maintain accurate record keeping and analysis of experimental data.

## STUDENT TASKS / ASSIGNMENTS / REQUIREMENTS

**Required Reading:** You are expected to read the required reading assignments in advance of lecture. If you are having trouble understanding the textbook, please talk with me about techniques for reading scientific textbooks. You are also responsible for reading laboratory handouts before the start of class.

**Online Quizzes:** Most weeks you will have a quiz posted on D2L prior to Monday's lecture. The quiz must be completed by the time class begins on Monday. Quizzes will cover the previous week's material as well as content for that day's lecture. Your lowest quiz grade will be dropped.

**In-class activities and participation:** We will have in-class activities throughout the semester to enhance your learning. Sometimes you will be asked to prepare for these activities prior to class. Your grade will be determined by overall participation. These points cannot be made up.

**Laboratory:** Write-ups are due the week following completion of the lab unit or as directed by instructor. Lab reports will contain an objective, pertinent materials and methods, results presented in figure format with figure legends followed by a discussion, which includes interpretation of data in lab report.

**Paper analysis:** Write up will include a brief introduction providing the background necessary to understand the research objective and the data discussed. In addition, students will formulate the scientific question and review the data addressing the question. Students will then provide the conclusion based on the data and offer an interpretation.

**Exams:** There will be two non-cumulative midterm exams and one cumulative final exam. Types of questions include, but are not limited to, multiple choice, true/false, short answer and essay.

## Grading Policies and Formulae:

Item	Points	% of Total Points	Letter Grade
2 exams (100 points each)	200	90 – 100	A
Quizzes	90	80 – 89.5	B
Labs	120	70 – 79.5	C
Paper Analysis	20	60 – 69.5	D
In-class activities and participation	20	< 60	Failing
Cumulative final exam	150	<b>Note:</b> Individual exams may be curved. There is no extra credit given in this course unless as part of an assignment and available to all class members.	
<b>Total</b>	<b>600</b>		

Your grade at the end of the class will be based solely on the assignments and exams turned in up to and including the final. *No extra projects, extra credit, re-submissions, retakes or rounding-up will be given to raise a grade no matter how close you are to the next letter grade. Do not ask - the answer will be no.*

**Course Outline:** See page 5 for a course outline that includes topics to be covered, reading assignments, and due dates.

## **COURSE POLICIES AND STATEMENTS**

### **Absence Policy:**

Attendance and punctuality: *You must make every effort to be present and punctual for class.* In many cases, you will be able to complete an assignment only if you were present in class to conduct the laboratory work. Punctuality for lab is extremely important so that you don't miss any instruction and have enough time to complete the lab. *If you are more than 20 minutes late to lab, your instructor may ask you to leave the lab and forfeit any points that you would have earned.* If you are absent, it is your responsibility to turn in your homework on time or incur late point deductions.

Make-ups: Even with an excused absence, there is NO guarantee that you will be able to make up a lab activity (some labs cannot be set-up again once they have been removed from the classroom). *Make-ups for exams will be given only in cases of documented illness/emergency (i.e. doctor's note). Quizzes cannot be made up.*

### **Academic Integrity Policy:**

By enrolling in this course, you are bound by the NEIU Student Code of Conduct: <http://www.neiu.edu/university-life/student-rights-and-responsibilities/student-code-conduct>. You will be informed by your instructor of any additional policy specific to your course regarding plagiarism, class disruptions, etc.

*Cheating and plagiarism will result in a score of zero for the assignment /exam, which may lead to failure of the course. Additionally, the Chair of the Department and the Dean of Students will be notified. Further action, including a report of academic misconduct, may be taken, depending upon the individual case. IT IS YOUR RESPONSIBILITY TO ASK FOR CLARIFICATION ANY TIME YOU ARE UNSURE ABOUT ORIGINALITY OF WORK.* The instructor reserves the right to use any means necessary to detect cheating and/or plagiarism.

You will be working closely together in class discussions, in the laboratory, and on group projects, where group efforts are a must. However, all assignments, exams, quizzes, and notebook entries require individual effort – they must be accomplished alone. *Even copying a phrase or sentence, without quote marks and a source reference, whether that phrase or sentence is from a lab partner, book, article, or the internet, is plagiarism.*

### **ADA Statement:**

Northeastern Illinois University (NEIU) complies with the Americans with Disabilities Act (ADA) in making reasonable accommodations for qualified students with disabilities. To request accommodations, students with special needs should make arrangements with the Student Disability Services (SDS) office, located on the main campus in room D104. Contact SDS via (773) 442-4595 or <http://www.neiu.edu/university-life/student-disability-services>.

## **Campus Safety:**

Web links to Campus Safety: Emergency Procedures and Safety Information can be found on NEIUport on the MyNEIU tab or as follows:

[http://homepages.neiu.edu/~neutemp/Emergency\\_Procedures/MainCampus/](http://homepages.neiu.edu/~neutemp/Emergency_Procedures/MainCampus/).

## **Learning Support Center**

The Learning Support Center (LSC) provides peer-directed academic tutoring for individuals and groups in the following areas:

- General Education courses
- Writing
- Reading
- Math Development and college level math
- Academic Coaching

The primary emphases are promoting active learning strategies, encouraging student engagement, and providing content support. Academic support is provided to students who are seeking assistance with understanding course concepts and preparing assignments, along with developing an improved learning system for college which includes motivation, academic engagement, brain-based habits for college learning, and learning strategies for note taking, textbook reading, and test taking.

Tutors are graduate and undergraduate students who are carefully selected on the basis of their own academic achievement by faculty and given supervision, training, and support to serve as tutors, mentors, and academic coaches. Additionally, the LSC provides all NEIU students an area for learning groups and an opportunity to learn with other students. Appointments are strongly encouraged, and students are welcome to drop in to discuss their individual academic support needs. For more information, visit the LSC website at [www.neiu.edu/lsc](http://www.neiu.edu/lsc) or, to schedule an appointment with a tutor, call 773-442-4568.

## **Course Communication**

All pertinent class communications between the instructor and students is conducted exclusively through NEIU e-mail. Thus it is the responsibility of students to check their NEIU e-mail account for all significant information and updates on class cancellations in the event of threatening weather conditions. Communication between the instructor and students via personal e-mail accounts (e.g., @gmail.com or @yahoo.com) will not occur.

Desire2Learn (D2L): *It is your responsibility to regularly check Desire2Learn as well as your NEIU e-mail address. I will frequently post handouts, changes to the course schedule, your grades, etc. on D2L. You are responsible for printing handouts posted on Desire2Learn and bringing them to class.*

You can access D2L at <https://neiu.desire2learn.com/> or by logging into NEIUport (<https://neiuport.neiu.edu/cp/home/displaylogin>) and selecting the D2L icon in the upper right. In both cases, log in using the same NetID and password that you use for NEIUport.

## **Late Work**

Late policy: *For full credit, assignments must be turned in by the designated time and date. If an assignment is turned in within 24 hours after a due date, 20% of points will be deducted. An additional 20% of points will be deducted for every additional day that an assignment is turned in late. No late assignments will be accepted after the final exam.*

**Course Outline:**

Note that this schedule or lecture material may change depending on our progress. I will post revisions to D2L as necessary.

<b>Tentative schedule for Fall 2017</b>			
<b>Week</b>	<b>Date</b>	<b>Lecture Mondays: 11:30am-2:10pm</b>	<b>Lab Mondays: 11:30am-2:10pm</b>
1	1/8	Introduction to Cells (Chap 1)	Chemical Components of Cells (Chap 2) Molecular Models Lab
2	1/15	<i>MLK Day – no class</i>	Lab safety Kitchen DNA Lab
3	1/22	<i>Quiz 1</i> Energy, Catalysis, Biosynthesis (Chap 3)	Protein Concentration Determination Lab
4	1/29	<i>Quiz 2</i> Protein Structure and Function (Chap 4)	Statistical analyses (use data from previous lab)
5	2/5	<i>Quiz 3</i> Finish Chap 4, Exam review	<i>Exam I (Chapters 1-4)</i>
6	2/12	<i>Lincoln's Birthday – no class</i>	Cell Fractionation Lab- Part 1
7	2/19	Membrane Structure (Chap 11)	Cell Fractionation Lab- Part 2
8	2/26	<i>Quiz 4</i> Membrane Transport (Chap 12)	Cell Fractionation Lab- Part 3
9	3/5	<i>Quiz 5</i> How Cells Obtain Energy from Food (Chap 13)	Cell Fractionation Lab- Part 4
10	3/12	<i>Quiz 6</i> Energy: Mitochondria and Chloroplasts (Chap 14)	Cell Fractionation Lab- Part 5
11	3/19	<i>Spring Break – no class</i>	
12*	3/26	<i>Exam 2 (Chapters 11-14)</i>	Cellular/Molecular Lab - Part 1
13	4/2	<i>Quiz 7 (on paper)</i> Paper Discussion	Cellular/Molecular Lab- Part 2
14	4/9	<i>Quiz 8</i> Intracellular Compartments and Transport (Chap 15)	Cellular/Molecular Lab - Part 3
15	4/16	<i>Quiz 9</i> Cell Communication (Chap 16)	Cellular/Molecular Lab - Part 4
16	4/23	<i>Quiz 10</i> The Cell Division Cycle (Chap 18)	Cellular/Molecular Lab - Part 5
17	4/30	Exam Review	<i>Final Exam (cumulative)</i> <b>Tuesday, May 1, 12:00-1:50pm</b>

\* March 30 - Last day to drop a class and receive a "W" (withdrawn) grade. (No refund/credit of tuition and fees.)