

**Biology 121 - Principles of Biology I**  
**Fall 2009 - Lecture Syllabus (section 01)**

**PROFESSOR INFORMATION**

**Lecture:** Dr. Richard Kliman

**Office:** Miller Building 24

**Office Hours:** Monday 3-4, Wednesday 3-4

**Email:** rmkliman@cedarcrest.edu

**Extension:** 3501

**Instructional Assistant:** Lizzy Sunderhaus. IA sessions will be held at the following times: Tues 1-2 PM, Wed 1-2 PM, Wed 6:30-7:30 PM, Friday 1-2 PM. Locations will be announced in class.

**GENERAL COURSE INFORMATION**

**Course:** Biology 121, Principles of Biology; Fall 2009

**Number of credits:** 3

**Required materials:** (1) Sadava, Heller, Orians, Purves, and Hillis. *Life: The Science of Biology, 8th Edition*. W. H. Freeman, 2006. ISBN: 9780716776710. (2) A standard classroom "clicker" (purchase at the bookstore).

**Course description (from catalog):** An introduction to the basic, unifying principles of biological systems, this course emphasizes the building blocks of life, cellular metabolism and processes, patterns of inheritance and human genetics and molecular mechanisms of heredity and gene function. The laboratory consists of investigative research and emphasizes skills and techniques. This course is designed for science majors, allied health and preprofessional students.

**Format of course:** Lecture (3 hours). The 1-credit lab is a separate course, and should be taken concurrently with lecture.

**Course objectives:** The purpose of this course (along with BIO 122) is to provide with an overview of the fundamental concepts of modern biology. In BIO 121, we will focus on the scientific method (its philosophy and practice); biochemistry and metabolism; cell structure and function; and inheritance.

**COURSE OUTCOMES/ASSESSMENT**

In addition to demonstrating understanding of the fundamental concepts of modern biology, you will demonstrate critical thinking and quantitative reasoning and the ability to apply genetic theory. The instructor will monitor your progress in classroom activities; the instructor will also evaluate your performance on quizzes and formal exams related to the course material.

**STUDENT ASSESSMENT/EVALUATION**

**Grading:** The final course grade is based on percentage of points earned:

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
| ≥ 93% = A  | ≥ 90% = A- | ≥ 87% = B+ | ≥ 83% = B  | ≥ 80% = B- |
| ≥ 77% = C+ | ≥ 73% = C  | ≥ 70% = C- | ≥ 67% = D+ | ≥ 60% = D  |

**Lecture Exams 1, 2, and 3: 100 pts. each.** Exams questions will generally be short-answer and essay format. There may be some multiple-choice, but this will never comprise the majority of the exam. The exams are not explicitly comprehensive, though understanding some material covered on a previous exam may be required to answer certain questions.

**Quizzes 1, 2, 3, and 4: 25 pts. each.** Quizzes will be given at the start of lecture, and you will have 15 minutes to complete them. Questions will usually be in short-answer format.

**Clicker questions: 50 pts.** Throughout the semester, you will be asked questions during lecture that will be answered by using a personal clicker. If you have no more than two absences during the semester, your clicker grade (based on the percentage of questions answered correctly) will be

adjusted upward by 10% (for example, if you answered 82% of the questions correctly, your grade would be adjusted to 90.2%, or 45.1 pts.).

**Final Exam: 150 pts.** The comprehensive final exam will be taken during the scheduled final exam time.

**Bonus Points for Attending IA Sessions: 1 pt./session; maximum of 30.** You are encouraged to take advantage of IA sessions. If the IA reports that you were present for at least 30 minutes of an active session (that is, one where questions were being discussed with little wasted time), you will be awarded the point.

**Extra Credit for Attending Relevant Events.** On occasion, extra credit will be awarded for attending an event that provides an opportunity for you to improve your understanding of biology or science, in general. If such an event is scheduled, details on the conditions for earning extra credit will be provided in class. [In all cases, you must be present for the entire event. It is distracting to speakers and members of the audience if you arrive late or leave early.]

### **STUDENT RESPONSIBILITIES**

**Lecture attendance:** Attendance in lecture is strongly recommended. **Attendance on exam days is required.**

- If you must miss class for a Cedar Crest-sanctioned activity, provide appropriate proof in advance, using the official form available from Student Affairs; this should be done as soon as you are aware of the conflict. Otherwise, your absence will be considered unexcused.
- If you must miss class for a legitimate, but unforeseen, reason, let us know as soon as possible; **your absence will be considered unexcused until I receive notification from the Dean of Student Affairs that the absence was judged to be unavoidable due to serious illness/medical emergency or family emergency.** *Please note that the Dean of Student Affairs only certifies that the absence was unavoidable and due to one of the above reasons. This is to maintain student confidentiality. It is solely up to the instructor to excuse an absence.*

**Policy on make-up exams:** If I agree that you missed an exam for a legitimate reason, I will prepare a makeup exam if the exam has already been returned. You should expect the exam to be essay-format.

### **CEDAR CREST COLLEGE HONOR CODE (INCLUDING THE CLASSROOM PROTOCOL)**

The Department of Biological Sciences fully supports the Cedar Crest College Honor Code. The Honor Code is explained in the Student Handbook; I recommend that you review it.

Disruptive behavior will not be tolerated. Any incidences will be noted and you risk being penalized 1/3 of your final letter grade for each incidence (e.g., B to a B-). Generally, disruptive behavior in the classroom is any behavior that interferes with the process of learning. At Cedar Crest College, it is the right of every student and faculty member to engage in a classroom experience free from disruptive behavior. What is disruptive to one person might not be disruptive to another, so the final authority on disruptive behavior is the faculty member. Faculty members have the authority to address disruptive behavior in the manner they see fit under the guidelines set forth in the College Catalog (please see the section on “Classroom Protocol”).

### **POLICY REGARDING LEARNING DISABILITIES**

Students with documented disabilities who may need academic accommodations should discuss these needs with their professors during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.

## **LECTURE TOPICS – topics correspond to chapters in the textbook; read before class!**

|          |  |
|----------|--|
| Topic 1  | Studying Life  |
| Topic 2  | The Chemistry of Life  |
| Topic 3  | Macromolecules and the Origin of Life                                  |
|          | <b>Quiz 1: Topics 2-3</b>  |
| Topic 4  | Cells: the Working Units of Life                                       |
| Topic 5  | The Dynamic Cell Membrane  |
|          | <b>EXAM 1: Topics 1-5</b>  |
| Topic 6  | Energy, Enzymes, and Metabolism  |
|          | <b>Quiz 2: Topic 6</b>   |
| Topic 7  | Pathways that Harvest Chemical Energy                                  |
| Topic 8  | Photosynthesis: Energy from Sunlight                                   |
|          | <b>EXAM 2: Topics 6-8</b>  |
| Topic 9  | Chromosomes, the Cell Cycle, and Cell Division                         |
| Topic 10 | Genetics: Mendel and Beyond  |
|          | <b>Quiz 3: Topics 9-10</b>   |
| Topic 11 | DNA and its Role in Heredity   |
| Topic 12 | From DNA to Protein: Genotype to Phenotype                             |
|          | <b>EXAM 3: Topics 9-12</b>   |
| Topic 13 | The Genetics of Viruses and Prokaryotes                                |
| Topic 14 | The Eukaryotic Genome and its Expression                               |
|          | <b>Quiz 4: Topics 13-14</b>  |
| Topic 15 | Cell Signaling and Communication                                       |
| Topic 16 | Recombinant DNA and Biotechnology                                      |
|          | <b>FINAL EXAM: Comprehensive, with slight emphasis on Topics 13-16</b> |

*Your obligations for this course include attendance at the final exam, on the day and time scheduled by the Registrar's Office. You should not make travel arrangements until the final exam schedule is published; if you must make plans early, you should schedule your travel after the last final exam day.*

### **IA SESSIONS**

Lizzy Sunderhaus will lead these sessions. They are an opportunity to review for quizzes and exams, to get help with concepts, and to learn effective study habits from a student who's been through the course.

### **ADVICE FOR SUCCESS**

**1. Come to class and be engaged.** Don't be a passive participant in your education. You will learn more if you pay attention, ask questions, and join in discussions. And bring your clickers.

**2. Come to class prepared.** You should have completed the reading for the day's topics. You don't have to fully understand everything in the reading, but you do need to be ready for lecture. You don't want to be surprised by terminology. And if you know what confused you in the reading, you'll know what to focus on during class and you'll be better prepared to ask questions to improve your understanding.

**3. Commit at least one hour each day (aside from class time) to the course.** You are unique individuals, and there is no one-size-fits-all approach to academic success. However, you'll want to set aside time to (a) read before class, (b) read after class, (c) clarify your notes, and (d) review your notes.

**4. Don't fall into the trap of confusing short-term memory with long-term retention.** If you only review material immediately after it's covered in class, you may accidentally convince yourself that you understand the material. Be sure to review the material several days later, to be sure that you still understand it.

**5. Seek help as soon as you realize you need it.** Go to IA sessions (and be prepared with specific questions). Come to my office hours, or make an appointment. You are welcome to stop by my office whenever the door is open; if I'm not in the middle of something that can't be postponed, I'm happy to meet with you.

**6. If you are not sure why you lost points on an exam or quiz, ask me.** Sometimes you may not understand the material as well as you thought you did. Other times, you may not be answering the question that was asked – that is, what you wrote was correct, but it wasn't really relevant. And other times, you may understand the material, but you are leaving out important details. Even if I think you understand concepts, I can't give you credit if you haven't explicitly demonstrated this.

### ANTICIPATED SCHEDULE

| <b>Monday</b>                                   | <b>Wednesday</b>   | <b>Friday</b>                            |
|---|--|--|
| <b>Aug 24</b><br>Introduction                   | <b>Aug 26</b><br>Topic 1   | <b>Aug 28</b><br>Topic 1                 |
| <b>Aug 31</b><br>Topic 2                        | <b>Sep 2</b><br>Topic 2  | <b>Sep 4</b><br>Topic 3                  |
| <b>Sep 7</b><br>No class - Labor Day            | <b>Sep 9</b><br>Topic 3  | <b>Sep 11</b><br><b>QUIZ 1; Topic 4</b>  |
| <b>Sep 14</b><br>Topic 4                        | <b>Sep 16</b><br>Topic 5   | <b>Sep 18</b><br>Topic 5                 |
| <b>Sep 21</b><br><b>EXAM 1</b>                  | <b>Sep 23</b><br>Topic 6   | <b>Sep 25</b><br>Topic 6                 |
| <b>Sep 28</b><br><b>QUIZ 2; Topic 7</b>         | <b>Sep 30</b><br>Topic 7   | <b>Oct 2</b><br>Topic 7                  |
| <b>Oct 5</b><br>Topic 8                         | <b>Oct 7</b><br>Topic 8  | <b>Oct 9</b><br><b>EXAM 2</b>            |
| <b>Oct 12</b><br>No class - Fall Break          | <b>Oct 14</b><br>Topic 9   | <b>Oct 16</b><br>Topic 9                 |
| <b>Oct 19</b><br>Topic 10                       | <b>Oct 21</b><br>Topic 10  | <b>Oct 23</b><br>No class - Inauguration |
| <b>Oct 26</b><br>Topic 10                       | <b>Oct 28</b><br><b>QUIZ 3; Topic 11</b>                         | <b>Oct 30</b><br>Topic 11                |
| <b>Nov 2</b><br>Topic 12                        | <b>Nov 4</b><br>Topic 12   | <b>Nov 6</b><br>Topic 12                 |
| <b>Nov 9</b><br><b>EXAM 3</b>                   | <b>Nov 11</b><br>Topic 13  | <b>Nov 13</b><br>Topic 13                |
| <b>Nov 16</b><br>Topic 14                       | <b>Nov 18</b><br>Topic 14  | <b>Nov 20</b><br><b>QUIZ 4; Topic 15</b> |
| <b>Nov 23</b><br>Topic 15                       | <b>Nov 25</b><br>No Class - Thanksgiving                         | <b>Nov 27</b><br>No class - Thanksgiving |
| <b>Nov 30</b><br>Topic 15                       | <b>Dec 2</b><br>Topic 16   | <b>Dec 4</b><br>Topic 16                 |
| <b>Dec 7</b><br>Review (material before Exam 2) | <b>Dec 8 (Friday Schedule)</b><br>Review (material after Exam 2) |  |