

**Biology 235 - Ecology, Evolution and Genetics**  
**Fall 2008 - Lecture Syllabus**

**PROFESSOR INFORMATION**

**Lecture:** Dr. Richard Kliman & Dr. John Cigliano

<b>Professor</b>	<b>Office</b>	<b>Ext.</b>	<b>Email</b>	<b>Office Hours</b>
Dr. Kliman	MB 24	3501	rmkliman@cedarcrest.edu	M 4-5, W 3-4
Dr. Cigliano	SC 119	3702	jaciglia@cedarcrest.edu	T 1-2, W 10-11

**Optional Review Session:** Monday, 7-9 PM, SC 139.

**GENERAL COURSE INFORMATION**

**Course:** Biology 235, Ecology, Evolution and Genetics; Fall 2008

**Number of credits:** 3 cr lecture and 1 cr lab (should be taken concurrently)

**Prerequisites:** Biology 121 and BIO 122 (lecture and lab), grades of C- or better

**Course web site:** <http://www2.cedarcrest.edu/academic/bio/rkliman/BIO235/bio235.htm>.

**Required text:** Rose, M.R. & L.D. Mueller. *Evolution and Ecology of the Organism*. Pearson, NJ, 2006. ISBN 0130104043.

**Outside readings:** To be selected.

**Course description (from catalog):** This course covers material beyond the introductory level in the areas of ecology, evolution and classical genetics. Topics include population, community and ecosystem ecology; extensions of Mendelian genetics; microevolution and evolutionary genetics; speciation; and macroevolution. The associated lab includes a field component. Lecture three hours, laboratory three hours.

**Format of course:** Lecture (3 hours) and lab (3 hours)

**Course objectives:** The purpose of this course is to provide you with an opportunity to develop an understanding of ecology (the interactions of organisms with other organisms and abiotic components of the environment), evolution (the change of organisms over time) and genetics (the inheritance of traits). As you will learn, these areas are highly integrated.

**COURSE OUTCOMES/ASSESSMENT**

At the completion of the course, you will understand essential concepts of modern evolutionary, ecological and genetic theory and be able to effectively communicate this understanding. You will demonstrate critical thinking, quantitative reasoning and the ability to apply genetic theory. The instructors will monitor your progress in classroom discussions; the instructors will also evaluate your performance on 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 and 2: 150 pts. each.** The lecture exams are not explicitly comprehensive, though understanding some material covered on a previous exam may be required to answer certain questions.

**Final Exam: 250 pts.** The final exam is comprehensive. There will be increased emphasis on material covered since Lecture Exam 2, but this new material will not constitute the majority of the exam.

**Plagiarism Assignment: 50 pts.** All students are required to take the plagiarism tutorial and test developed by Indiana University and submit the signed confirmation certificate to one of the instructors by 29 September 2008. In the box, cross out “my academic advisor” and replace it with the names of your instructor where it states, “If I had questions after finishing the tutorial, this document confirms that I have sought help from my academic advisor...” The tutorial home page is <http://www.indiana.edu/~istd/>.

**Class Participation.** This course will be concept based. To support the learning of these concepts, you will engage in group discussions and activities. Many of the discussion will be selected from the review questions at the end of each chapter. However, when appropriate, we will assign our own questions. Activities will consist of in-class, group mini-projects and discussions. PARTICIPATION BY EACH CLASS MEMBER IS EXPECTED. Some of these review questions and activities will be used as exam questions. No grade will be given for participation, but students who are actively engaged in classroom discussions will have their final grade rounded up if their grade is near or at the upper range of a grade (e.g., 89/B+ changed to A-). Students who are not actively engaged will not have their grades rounded up.

### **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 an official form; 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 we hear from the Dean of Student's Office that the absence was judged to be unavoidable.

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

**Lab attendance:** Attendance in lab is required. The policy for excused lab absences is the same as that for excused lecture absences. Unexcused lab absences will result in a zero on the related report or presentation.

**Policy on make-up labs:** There are no make-up labs. All assignments related to the labs must be completed. If you have an excused lab absence, the lab instructor will devise an *ad hoc* course of action such that the educational goals of the lab are not compromised.

### **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; we recommend that you review it.

Disruptive behavior will not be tolerated. Any incidences will be noted and you will be 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”).

Disruptive behavior may be viewed on a continuum ranging from the isolated incidents of mildly annoying or irritating behavior to more clearly disruptive, dangerous, and/or violent behavior.

Examples of disruptive behavior may include the following:

- Persistent speaking without permission
- Use of electronic devices, cell phones, or pagers during class
- Threats or harassment of any kind
- Poor personal hygiene
- Revealing dress
- Working on homework for other classes
- Inappropriate personal disclosures during class (sharing too much information)
- Sleeping in class
- Entering class late or leaving early (without permission)
- Eating/drinking in class without permission
- Disputing authority and arguing with faculty and other students
- Physical disruptions or physical altercations

### **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**

	Topic	Reading (before class!)
Topic 1	Overview of Ecology and Evolution	Chapter 1
Topic 2	Phylogenetic Trees	Chapter 2
Topic 3	Physical Ecology	Chapter 8
Topic 4	Birth/Death	Chapter 10
Topic 5	Life Histories	Chapter 7
Topic 6	Dispersal	Chapter 11
<b>EXAM 1: Topics 1-6</b>		
Topic 7	Genetics	Chapter 3
Topic 8	Natural Selection	Chapter 4
Topic 9	Competition	Chapter 12
Topic 10	Predation and Parasitism	Chapters 13 and 14
Topic 11	Speciation/Extinction	Chapter 6
<b>EXAM 2: Topics 7-11</b>		
Topic 12	Community/Ecosystem Ecology	Chapter 15
Topic 13	Biosphere	Chapter 16
Topic 14	Conservation	Chapter 17
Topic 15	Evolution of Sex	Chapter 18
Topic 16	Mating Strategies and Social Evolution	Chapters 19 and 20

### **FINAL EXAM: comprehensive**

*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.*

### **OUR PHILOSOPHY REGARDING THIS COURSE**

The material covered in this course is highly conceptual and will present a difficult, but ultimately rewarding, intellectual challenge. Having taught this material for many years, we are aware of the challenges, and have developed (and continue to develop) a variety of approaches that help motivated students achieve a high level of understanding. We want to see every student succeed, and would gladly assign a grade of 'A' to every student

in the class if every student earned it. Many students have earned that grade in the previously offered sophomore-level "core" courses. Unfortunately, many others have failed or withdrawn from a course after investing significant time and effort. We know no college professors who gain satisfaction from assigning a low grade to a student, especially one who is making a sincere effort. However, one of the duties of college professors is to assess your understanding and assign an appropriate grade. We believe it is well worth your time to carefully read the following paragraphs that describe our philosophy regarding the teaching of Ecology, Evolution and Genetics to college undergraduates.

- 1. We will not teach an inadequate course.** We cannot, in good conscience, teach a course that will leave conscientious students at a disadvantage upon graduation. We know what is being taught in equivalent courses at many other colleges and universities. [We don't just know other ecologists, geneticists and evolutionary biologists; many of our good friends are ecologists, geneticists and evolutionary biologists!] You should expect a comparable course at Cedar Crest. You should be pleased to realize that we firmly believe you can handle this course if you apply yourself and if you enter the course with the proper preparation (see #4).
- 2. We are not generally in favor of the "spoon-feeding" approach.** We will use the class lecture time to lay out the fundamentals and to go into detail on some of the subject matter. We will assume that you come to class having reviewed the related review questions and having read the related material in the textbook (ideally in this order). We expect you to be prepared to ask questions on concepts that require clarification. Unless we say otherwise, all material in the assigned readings is fair game on an exam. Expect to be tested on material that is not explicitly discussed in class.
- 3. Exams are intended to assess your mastery of the subject material, not your familiarity with it.** You should be prepared to think and to work efficiently when you take an exam in this course. We do not award credit for nonsense answers that use terminology in ludicrous ways. Some students inevitably complain that a given exam is too long. This is probably true in one obvious sense: the exam is too long for the students who complain. However, the reason the exam seems too long is that the students are not truly prepared to take it. You should not expect to be able to do something on an exam that you could not do beforehand. If you are not comfortable with the material (and be honest with yourself), you will almost certainly have difficulty demonstrating mastery on an exam.
- 4. We assume that, having registered for the course, you are ready for it.** We expect that, having passed the prerequisites for the course, you have an adequate understanding of basic Mendelian genetics, as well as basic ecology and evolutionary biology. We also assume that you are able to handle the arithmetic. If you took a freshman biology course at another institution, you should familiarize yourself with the material covered in BIO 121/122 at Cedar Crest; syllabi can be found on the Biology Department web site.
- 5. We assume that you are willing to accept personal responsibility for your success in the course.** If you are having difficulty with the course, you need to be proactive, not reactive. If you do poorly on the first exam, do not assume it was bad luck. You are encouraged to seek our advice at any time during the course, but the earlier you do this, the more likely we can help you develop an appropriate strategy. Knowing that you must earn a particular grade in this course to maintain your GPA at a desired level, we expect that you will do what is necessary (and ethical) from Day One of the course to achieve your goal.

**ANTICIPATED SCHEDULE (TOPICS AND INSTRUCTOR)**

<b>Monday</b>	<b>Wednesday</b>	<b>Friday</b>
<b>Aug 25</b> Intro Cigliano/Kliman	<b>Aug 27</b> Overview of Ecology and Evolution Kliman	<b>Aug 29</b> Overview of Ecology and Evolution Kliman
<b>Sep 1</b> No class	<b>Sep 3</b> Phylogenetic Trees Kliman	<b>Sep 5</b> Phylogenetic Trees Kliman
<b>Sep 8</b> Physical Ecology Kliman	<b>Sep 10</b> Physical Ecology Kliman	<b>Sep 12</b> Birth/Death Cigliano
<b>Sep 15</b> Birth/Death Cigliano	<b>Sep 17</b> Birth/Death Cigliano	<b>Sep 19</b> Life Histories Kliman
<b>Sep 22</b> Life Histories Kliman	<b>Sep 24</b> Dispersal Cigliano	<b>Sep 26</b> Dispersal Cigliano
<b>Sep 29</b> EXAM 1	<b>Oct 1</b> Genetics Kliman	<b>Oct 3</b> Genetics Kliman
<b>Oct 6</b> Genetics Kliman	<b>Oct 8</b> Genetics Kliman	<b>Oct 10</b> Genetics Kliman
<b>Oct 13</b> No class	<b>Oct 15</b> Genetics Kliman	<b>Oct 17</b> Natural Selection Kliman
<b>Oct 20</b> Natural Selection Kliman	<b>Oct 22</b> Competition Cigliano	<b>Oct 24</b> Competition Cigliano
<b>Oct 27</b> Predation Cigliano	<b>Oct 29</b> Parasitism Cigliano	<b>Oct 31</b> Speciation/Extinction Kliman
<b>Nov 3</b> Speciation/Extinction Kliman	<b>Nov 5</b> Speciation/Extinction Kliman	<b>Nov 7</b> EXAM 2
<b>Nov 10</b> Community/Ecosystem Ecology Cigliano	<b>Nov 12</b> Community/Ecosystem Ecology Cigliano	<b>Nov 14</b> Community/Ecosystem Ecology Cigliano
<b>Nov 17</b> Biosphere Cigliano	<b>Nov 19</b> Biosphere Cigliano	<b>Nov 21</b> Conservation Cigliano
<b>Nov 24</b> Conservation Cigliano	<b>Nov 26</b> No Class	<b>Nov 28</b> No class
<b>Dec 1</b> Conservation Cigliano	<b>Dec 3</b> Evolution of Sex Kliman	<b>Dec 5</b> Mating Systems Cigliano
<b>Dec 8</b> Social Evolution Cigliano		