

UNIVERSITY OF KENTUCKY

INDEPENDENT STUDY PROGRAM

LEXINGTON, KY. 40506

Biology 508

3 Semester Hours

Evolution

19 Assignments

**PREFACE**

Evolution is a fact, contrary to the public perception. **How** evolution occurs is where the theorizing comes in. The concept of evolution is central to the study of biology, and is the key to understanding the diversity of life. Without evolution, most fields of biology – physiology, ecology, genetics, systematics, anatomy – as well as anthropology and psychology, make no sense. It also contributes coherence to many areas of geology. It relies on data from radioactive dating and paleontology. The theory of plate tectonics provided answers to many puzzling questions in animal and plant biogeography. Thus evolution is intertwined with many areas of modern science.

The field of evolutionary biology has expanded exponentially, with exciting new hypotheses and discoveries of every type being published monthly. Advances in molecular biology have given a novel perspective on old questions. New techniques for fossil dating, and new discoveries of rich fossil beds have provided increasingly sharper insights into evolutionary processes of the past.

This course will introduce the student to the history of thought in evolutionary biology, the genetics of evolutionary adaptation and change, and to the historical perspective of macroevolution. There are many unresolved and controversial issues in evolutionary theory; most of these have been presented as such, with supporting data from the various viewpoints, as a guide to students wishing to probe further into the literature. With new material pouring in to journals and publications every week, there are very few irrefutable concepts or hard positions that survive unchallenged. Also, the field is so wide, and encompasses so many disciplines, that providing detailed knowledge of each area in one course would be impossible. Therefore, we have attempted to instill in the student a knowledge of basic concepts, terminology and methods from which they can expand by reading on their own.

The required text is *Evolutionary Biology* (3rd edition) - Douglas Futuyma; Sinauer Associates, 1998. It is available from the University Bookstore, Kennedy's or any reputable bookstore dealing in college texts.

## Grading

Total points for the course = 800. There are 19 assignments, worth a variable number of points each, totalling 500 pts. The final exam will be worth 300 points, and consists of multiple choice questions covering the material in the assignments. The course grade will be based on the following scale:

A = 720 pts. or more

B = 640-719

C = 560-639

D = 480-559

A grade below 559 is considered an E, and no credit will be given.

No grade will be assigned without a final examination.

A passing grade on the final exam is required to pass the course.

## Suggestions for Study

This is a SENIOR LEVEL course designed for students with a solid background in biology. **A good genetics course is a prerequisite**, and a basic course in college algebra is recommended. Chapters 3 and 4 in the text give an excellent review of genetics, development and ecological principles that are a necessary background for understanding the concepts of evolution. These chapters will not be covered in the course. Use them for refreshing your memory.

A good deal of the material relates to concepts and the explanations for them, and discussion questions comprise one-half to two-thirds of the assignment points. Clear, concise, well-written discussion answers are essential. Please do not plagiarize from the textbook; I prefer you to paraphrase & synthesize, not copy blindly and directly. I don't mind bad handwriting, but poor English or garbled ideas will not make the grade. Also, many times a concept will be covered in more than one chapter, and there will be referrals back to previous items. Your answers should include **all** available material, not just that in the chapter covered by the assignment. At the ends of most assignments are supplementary notes containing errata, further explanations of a concept, or problem-solving techniques not mentioned in the text. Be sure to check out the Supplement each time; your answer might be located there. In addition, there will be xeroxed handouts to supplement some of the chapters. These will be sent to the student from time to time.

PLEASE SEE NOTE ON THE FOLLOWING PAGE.

## NOTE

You **MUST** send in Assignment 1 first, so that I will know you are starting the course work. At that time I will send you the Handouts that are crucial to Assignments 2 - 19. **POINTS WILL BE DEDUCTED** from questions that are answered incorrectly due to lack of reference to handout material.

Please answer the matching and multiple choice questions using the assignment pages as answer sheets. You may copy them and send the copies in or send in the originals. Please use your own paper for the discussion questions. Be sure to attach a fully filled out blue cover sheet to **each** assignment before returning them to the Independent Study Office for grading. It is a good idea for students to make a copy of each assignment, because they can be lost in the mail. It does not happen very often, but if it should occur, copies can be resubmitted for grading.

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