

Evolution—BSC 305

Textbook: *Evolutionary Analysis*, 3rd ed., by S. Freeman and J.C. Herron, Pearson/Prentice Hall, ISBN 0-13-101859-0; www.prenhall.com/freeman (tutorials to support the text)

Course objectives: Upon successful completion of this course you will have a basic understanding of evolutionary theory. You will understand the evidence for evolution, the genetic underpinnings of evolution, and the role of adaptation. You will have an overview of the history of life that is explained by evolutionary theory.

Topic

I. INTRODUCTION

1. A Case for Evolutionary Thinking: Understanding HIV
2. The Evidence for Evolution
3. Darwinian Natural Selection

Examination I (30 points; Chapters 1–3)

II. MECHANISMS OF EVOLUTIONARY CHANGE

4. Mutation and Genetic Variation
5. Mendelian Genetics in Populations I: Selection and Mutation as Mechanisms of Evolution, pp. 141–161, 182–185; Q 1–4, 9
6. Mendelian Genetics in Populations II: Migration, Genetic Drift, and Nonrandom Mating, pp. 195–210, 221–226, 236–240, 245–247; Q 1, 4–10, 15, 16

Examination II (20 points; Chapters 4–6)

III. ADAPTATION

9. Studying Adaptation: Evolutionary Analysis of Form and Function
10. Sexual Selection, pp. 373–400; Q 1–10
11. Kin Selection and Social Behavior, pp. 419–426, 431–436, 439–449; Q 1, 5–7, 9, 11, 12
12. Aging and Other Life History Characters, pp. 455–474; Q 1, 3–5

Examination III (25 points; Chapters 9–12)

IV. THE HISTORY OF LIFE

14. Reconstructing Evolutionary Trees
15. Mechanisms of Speciation
16. The Origins of Life and Precambrian Evolution
17. The Cambrian Explosion and Beyond
18. Development and Evolution

Examination IV (50 points; Chapters 14–18)

You are responsible for the material in all pages and for all questions at the ends of the chapters listed except where specifically limited. Your grade for the course will be based on scores from four examinations (125 points total) due on the days indicated. Each examination will comprise short answer and essay questions from the question sets at the ends of the chapters covered during the grading period. If you miss an examination, you must reschedule and take it within one week or forfeit the examination. The following grading scale will be applied to the total number of points available in the course.

A: 90% (112–125)

B: 80% (100–111)

C: 70% (087–099)

D: 60% (075–088)

Extra Credit. Chapter 19, Human Evolution, will not be covered in class. You may read the chapter on your own and be prepared to answer questions (graded for up to 10 points) from the end of the chapter that will be added as extra credit to your final grade. These questions will be included with examination IV.