

Graded Component	Points TOTAL	%
Learning readiness quizzes	85 pts <ul style="list-style-type: none"> lecture notes & assigned readings (2 two pt + 1 one pt Q/ lecture & case challenge objectives (1 one pt/challenge lecture session 	12%
Exams	300 pts <ul style="list-style-type: none"> Midterm 100 pts Final 200 pts 	43%
Self & Peer reviews	20 pts <ul style="list-style-type: none"> 10 pts each for completing mid-term & final evaluation forms 	2%
Diversity Index Assignment	25 pts	4%
Beak of the Finch Book	50 pts	7%
Participation pts	75 pts (5 pts/ lecture on task)	11%
Team Challenge Pts	150 pts <ul style="list-style-type: none"> 15 pts each for 10 challenges 	21%
Grand Total	705 potential points	

Bio158 Honors Organismal & Ecological Biology 2014 Course Schedule

*Readings assigned below are from lecture notes and pdfs of original literature (available under course notes, urls, & attached readings at Bio158 Blackboard Site); from Book (The Beak of the Finch, by Jonathan Weiner available from book store; and assigned literature that you must search for under Google Scholar. **Note that you will be quizzed at the beginning of each lecture on assigned readings and lecture notes made available on blackboard for each date. You must read these materials before class on that date. CHECK BLACKBOARD UNDER BOTH ASSIGNMENTS & MATERIALS FOR EACH LECTURE DATE***

August 21. 1 Introduction to the Course; Assignment to Teams & Evaluation of Personality as it affects team performance.

August 26. 1 Challenge: Case in Point for Active Learning

Assignment. Read and complete preliminary analysis required for Challenge 1: A Case in Point- From Active Learning to the Job Market.

August 28. 2 The Nature of Science and Science Method

Reading Assignments: 1. Introduction to Peirce & 2. Peirce's Fixation of belief available on blackboard under 2; 3. Understanding Science 101 at <http://undsci.berkeley.edu/> and 4. examine how science works flowchart in detail at <http://undsci.berkeley.edu/article/scienceflowchart>

September 2. 3 Introduction to Life and Biodiversity: Introduction to your Diversity Assessment assignment – plan measure and complete data collection; individual (calculate own indices and write up in report format to turn in and oral presentation Sept 9)

Reading Assignment: Pimm et.al., The future of Biodiversity pdf available on black board under 3

September 4. 3 Challenge: Threats to Biodiversity

Reading assignment: Threats to Biodiversity Background pdf under 3

September 9. 3 Teams present diversity study results.

September 11. 4 Climate Creates Environments Favoring Diversity of Life: Biogeographical Realms Produced by Climate & Topography: Biomes

Readings: for more information besides lecture notes consult: 1. <http://www.ecn.ac.uk/what-we-do/education/tutorials-weather-climate/tutorial-welcome/climate/factors-affecting-climate>

September 16. 4 Challenge: Global Climate Change

September 18. 5 Transformation of Energy & Matter Supports a Diversity of Organisms: Part I. Trophic Structure; Part II: Biogeochemical Cycles

September 23. 5 Challenge: Trophic Structure

September 25. 6 Evolution: Part I. Natural Selection & History;

Reading assignment: Evolution 101 review materials provided at http://evolution.berkeley.edu/evolibrary/search/topics.php?topic_id=13 (Read & digest to fill in lecture notes for lectures 6,-7). Reading Assignment Due: The Beak of the Finch, by Jonathan Weiner

September 30. 6 Natural Selection Challenge

October 2. 7 Evolution Part II. Evolutionary Trees.
Challenge: Trees based on Molecular Evidence

October 7. 8 Mechanisms of Evolutionary Change. Part I. Mendelian Genetics

October 9. 8 **Challenge:** Mendelian Genetics

October 14. 9 Mechanisms of Evolutionary Change. Part II. Chromosomal Inheritance

October 16. **FALL BREAK**

October 21. 9 **Challenge:** Chromosomal Inheritance

October 23. 10 Population Genetics **Challenge:** Blue Paper Clip Syndrome

October 28. 10 **Challenge:** Speciation

EXAM 1 (Take Home Due -Oct. 9 100 pts)

October 30. 11 **Beginnings/Origins of Life**

Readings: 2 pdfs: The Origins Divide & Prebiotic soup – Revisiting the Miller Experiment

November 4. 11 **Challenge:** *Replication vs Metabolism First*

November 6. 12 Biodiversity through Geological Time

November 11. 13 From Prokaryotes to the First Eukaryotes

November 13. 14 Advances in the Seas

November 18. 15 Mountain Building – from plants to pollinators

November 25 16 Vertebrate Success to Human Evolution

November 27 **Turkey Day Break**

December 2. 16 **Challenge:** From Primates to Humans

December 11. 10:15 AM FINAL EXAM

November 11. Higher Invertebrates lecture notes

Organism Sales Pitches: Mollusca; Echinodermata; Annelida

November 13. Advances in the Seas and move to land lecture notes

Organism Sales Pitches: Chordata, Arthropoda; non vascular Plantae

November 18. Land Continued -Vertebrate Success lecture notes

Organism Sales Pitches: Vascular Plantae, Fungi

Issues Presentations:

Evolution of C4 plants and grasslands over time

Gene Duplication- Development & Evolution Ch 19

November 20.

November 25

November 27 Turkey Day

December 2. Human Evolution

Issues Presentations CH 20

Part I. Human Evolution/Hominid Phylogeny: From Humans and extant apes to unique traits

Part II. Migration & Separation over time (e.g., ABO blood types, loss of melanin and lactose intolerance).

December 11. 10:15AM Final Exam

Student Learning Expectations/Outcomes for the Bio158 Course:

Lecture: Learning Goals

1. To develop an in depth understanding of the variety of life forms and how this diversity is measured.
2. To understand the conceptual basis of the interconnectedness of all life as it relates to evolutionary processes and genetic underpinnings.
3. To gain scientific literacy through understanding science method and developing skill sets in its practice and in critical reading.
4. To gain an appreciation for and facility with active learning.
5. To understand the quantitative nature of biology, both in the form of conceptual models and as tools for testing the significance of apparent relationships.
6. To extend the basic understanding of biodiversity obtained in this course to the broader context: its implications to human wellbeing.

Associated Skill Goals

1. Students will be able to partition a sample of organisms into groups of similar form and explain the basis for their partitioning scheme, as well as to compare the diversities of two or more samples.
2. Students will be able to place organisms into phylogenies, using the broad range of potential data available to them.
3. Students will be able to comprehend, interpret, evaluate and critique both primary and secondary science literature.
4. Students will be able interpret graphs, manipulate variables in simple models, determine central tendency and estimate the variation around it.
5. Students will evaluate arguments and make informed decisions about social and economic problems associated with biodiversity and its conceptual basis.
6. Students will be able to communicate scientific results in written, oral and visual presentations.
7. Students will be able to explain the basic features of successful team work as well as in what ways they can best contribute to team goals.