

Concepts in Biology 2015, Honors (Biol 200H01 and Biol 200H03)

Course Description: This course is survey of selected concepts in the biological sciences with an emphasis on understanding linkages across biological disciplines. The course will provide the basis for more advanced coursework and learning experiences in the biological sciences.

Prerequisites: None.

Course Website: <http://moodle.njit.edu>

Textbook: We will use free online resources including OpenStax Biology and Anatomy/Physiology textbooks and recently published articles and references.

Grading: Grades are based on exams (50%, 2 midterms and 1 final exam) and a 15 to 20 page term paper (40%). The final 10% of grades are based on other assignments throughout the semester.

Attendance, exam, and paper deadlines: Attendance for recitations is required. Exams may not be rescheduled. A penalty of 10% per day will be assessed for late assignments. Please contact Dr. Fortune in case of medical or family emergencies.

Lectures: Tues/Thurs 10:00am - 11:25am, Kupfrian 211 (KUPF211)

Recitations: H01 Fri. 1:00pm - 2:25pm CKB217; H03 Fri. 2:30pm - 3:55pm CKB315

Course Schedule

Week 1: Introduction

Thurs. 03 Sept 2015 Introductory material, expectations, policies, why are we here?
Friday 05 Sept 2014 Educational goals and ethics

Week 2: Biodiversity

Mon. 08 Sept 2015 Biodiversity On Earth
Thurs. 10 Sept 2015 The Origin of Species
Friday 11 Sept 2015 Impacts of biodiversity

Week 3: Evolution

Mon. 14 Sept 2015 Evolutionary processes
Thurs. 17 Sept 2015 Changes in biodiversity over time
Friday 18 Sept 2014 Human impacts on the biome

Week 4: Genes

Mon. 21 Sept 2015 DNA structure and transcription review
Thurs. 24 Sept 2015 DNA replication and cell cycle
Friday 25 Sept 2014 Discussion of paper topics

Week 5: Cancer

Mon. 28 Sept 2015 Cancer 1
Thurs. 1 Oct 2015 Cancer 2
Friday 2 Oct 2015 Discussion of paper topics

Week 6: Midterm exam

Mon. 5 Oct 2015 Microbiome
Thurs. 8 Oct 2015 Exam #1
Friday 9 Oct 2014 Exam review

Week 7: Organisms in their environments

Mon. 12 Oct 2015 Life in moving fluids
Thurs. 15 Oct 2015 Effects of size
Friday 16 Oct 2014 Laminar and turbulent flow

Week 8: Movement

Mon. 19 Oct 2014 No class
Thurs. 22 Oct 2014 Animal movement
Friday 23 Oct 2014 Breaking stuff

Week 9: Musculoskeletal systems

Mon. 26 Oct 2014 Musculoskeletal systems
Thurs. 29 Oct 2014 Feedback control
Friday 30 Oct 2014 Exploring feedback

Week 10: Scientific Writing

Mon. 2 Nov 2014 Scientific writing for scientists
Thurs. 5 Nov 2014 Science reporting to the public
Friday 6 Nov 2014 Paper review

Week 11: Ethics

Mon. 9 Nov 2014 Animal care and use / Bioethics
Thurs. 12 Nov 2014 **Exam #2**
Friday 13 Nov 2014 Exam review

Week 12: Communicable diseases

Mon. 16 Nov 2014 Categories of disease, modes of transmission
Thurs. 19 Nov 2014 Viruses
Friday 21 Nov 2014 Transmission of disease

Week 13: Epidemiology, Thanksgiving break

Mon. 23 Nov 2014 Epidemiology
Thurs. 26 Nov 2014 Thanksgiving Break
Friday 28 Nov 2014 Thanksgiving Break

Week 14: Genetics and evolution revisited

Mon. 30 Dec 2014 Phylogenetics
Thurs. 3 Dec 2014 Genetic technologies
Friday 5 Dec 2014 Final review of paper drafts

Week 15: Where do we go from here?

Tuesday 7 Dec 2014 The next steps
Thursday 10 Dec 2014 Reading Day 1

• **Final Exam during finals week**

Academic Integrity

The course expects the highest level of academic integrity and excellence from its students. The course and the University have a “zero tolerance” policy for academic dishonesty, including plagiarism and cheating. Instances of dishonesty will be punished by a zero on the assignment and consultation with the office of the Dean of Students to determine if further action is required. If you have any questions about what constitutes plagiarism or cheating, please ask us or refer to the academic integrity code:

• <http://www.njit.edu/academics/integrity.php>.

Learning objectives and goals

- 1) Students will be able to relate, discuss, and study fundamental concepts in biology related to:
 - a) Biological evolution
 - b) Biodiversity
 - c) Interactions between organisms and the environment
 - d) Structure of biological organization from genes to populations
 - e) Impacts of the properties of the biological world on medicine
 - f) Impacts of the properties of the biological world on society
- 2) Read and evaluate the quality and relevance of scientific publications and reporting.
- 3) Understand and use strategies for obtaining and using scientific resources.
 - a) Discover and evaluate online resources
 - b) Make appropriate attribution of sources.
 - c) Integrate information from multiple sources to formulate broader concepts.
- 4) Communicate scientific information effectively.
 - a) Use source materials with appropriate attribution and without plagiarizing.
 - b) Present information in written and graphical forms.
 - c) Explore writing and presentation strategies for different audiences.