

BIOLOGY 200H (H01-H03): CONCEPTS IN BIOLOGY HONORS

INSTRUCTOR:	Dr. Eric S. Fortune	EMAIL:	eric.fortune@njit.edu
OFFICE:	420D Central King Building	COURSE WEBSITE:	http://moodle.njit.edu
OFFICE HOURS:	T: 5:30pm-6:30pm	LECTURE SCHEDULE:	W,F: 10:00am – 11:25am in CKB217
RECITATIONS:	M: 1:00PM – 2:25PM (H01) or M: 2:30PM – 3:55PM (H03) in CKB 206		

COURSE DESCRIPTION:

This course is review of a few select 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.

PREREQUISITE: Math 107 or 108 or equivalent.

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 assignments in the recitation sessions throughout the semester.

ASSIGNMENT	PERCENTAGE
Recitation Assignments	10%
Term Paper	40%
Midterms & Final Exam	50%
TOTAL	100%

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.

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](#).

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LEARNING OBJECTIVES AND GOALS

- 1) Students will be able to describe, engage in fact-based discussions, and conduct deeper academic study via reading of published literature for a select group of fundamental concepts in biology including:
 - 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) Develop and implement 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
- 4) Students will improve their ability to communicate scientific information:
 - 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.
- 5) 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.

Evaluation

- 1) Exams. The exams will be composed of short-answer questions. These questions typically require that the student write answers of 3 to 10 sentences that generally include a combination of memorized facts and interpretation or synthesis. There will be 2 exams during the semester and a final exam.
- 2) Term paper. The term paper will be 15 to 20 pages in length, 1.5 to 2 spacing. The topic of the paper is of your own choosing, but must be approved by Dr. Fortune. The final draft is due on the day of the final exam by 5pm. You must include a separate bibliography / literature cited section. This section is not included in the page count of the term paper. A minimum of 5 sources must be cited in the paper, although the paper may focus heavily on one or two published works.

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COURSE OUTLINE:

WEEK/DATES	LECTURE TOPICS	RECITATION TOPICS
Week 1: Introduction: <i>Biology and Anat/Phys Ch. 1, Mlodinow12015</i>		
* Week 2: Biodiversity: <i>CaleyGlobal2014</i>		
W: 07 Sept 2016	Why are we here?	M: 12 Sept. 2016: Discussion of educational goals and ethics
F: 09 Sept 2016	Ethics 1: Biology of learning	
W: 14 Sept 2016	Ethics 2: Care and Use of animals in research	
F: 16 Sept 2016	Biodiversity On Earth, Species concept	
Week 3: Evolution: <i>Biology Ch. 11, OstfeldBiodiversity2000</i>		
* Week 4: Evolution		
W: 21 Sept 2016	Changes in biodiversity over time	M: 26 Sept. 2016: Discussion of term paper topics
F: 23 Sept 2016	Origin of Species 1	
W: 28 Sept 2016	Origin of Species 2	M: 03 Oct. 2016: Review and finalization of term paper topics
F: 30 Sept 2016	Adaptation	
Week 5: Exam 1: <i>Biology Ch 9:</i> * Week 6: Genes and the organism: <i>Biology Ch. 6 and 7</i>		
W: 05 Oct. 2016	Genetic information, DNA / RNA	M: 10 Oct 2016: Exam review
F: 07 Oct. 2016	Exam 1	
W: 12 Oct. 2016	Genetic diversity	M: 17 Oct 2016: <i>Term paper Outlines due</i>
F: 14 Oct. 2016	Regulation of Cell Cycle	
Week 7 Cancer: <i>JohnsonCellular2015</i>		
W: 19 Oct. 2016	Cancer 1	F: 24 Oct 2016: Finding sources for term papers
F: 16 Oct. 2016	Cancer 2	
Week 8: Epidemiology: <i>ss1978.pdf (CDC Principles of Epidemiology) Ch. 1</i>		
* Week 9: Exam 2: <i>Biology Ch. 17.1, HotoppWidespread2007</i>		
W: 26 Oct. 2016	Epidemiology	M: 31 Oct. 2016: Using information from sources
F: 28 Oct. 2016	Categories of disease, modes of transmission	
W: 02 Nov. 2016	Viruses	M: 07 Nov. 2016: Review of Exam 2
F: 04 Nov. 2016	Exam 2	
Week 10: Genetics and evolution revisited: <i>Biology Ch. 12</i>		
* Week 11: Microbiome: <i>FASEB-HumanMicrobiome</i>		
W: 09 Nov. 2016	Phylogenetics	M: 14 Nov. 2016: NO RECITATION
F: 11 Nov. 2016	Genetic technologies	
W: 16 Nov. 2016	Microbiome 1	M: 21 Nov. 2016: <i>Peer review of draft term papers</i>
F: 18 Nov 2016	Microbiome 2	
Week 12: Epigenetics: <i>EpiGenetics2006, WilliamsEpigenetics2013</i> * Week 13: Genetic immunity		
W: 23 Nov. 2016	Epigenetics 1	M: 28 Nov 2016: NO RECITATION
F: 25 Nov. 2016	Thanksgiving Break	
W: 30 Nov. 2016	Epigenetics 2	M: 05 Dec. 2016: <i>Peer review of draft term papers</i>
F: 02 Dec. 2016	CRISPR-CAS9	
Week 14: Beyond genetics * Week 15: Feedback Control		
W: 07 Dec 2016	Behavior 1	M: 12 Dec 2016: Final Review of Paper Drafts
F: 09 Dec 2016	Behavior 2	
W: 14 Dec 2016	Feedback Control	Final Paper Due on Exam Day

