

BIOLOGY 200H: CONCEPTS IN BIOLOGY HONORS

NJIT: BIOL 200-H01 & BIOL 200-H03 (90220 and 90221) ■ **RU: 28:120:200: H1 & H3** (11700 and 19452)

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| INSTRUCTOR: | Dr. Eric S. Fortune | EMAIL: | eric.fortune@njit.edu |
| OFFICE: | Boyden Hall 339 | COURSE WEBSITE: | http://njit2.mrooms.net |
| OFFICE HOURS: | T: 5:30pm-6:30pm | LECTURE SCHEDULE: | T, R: 4:00 – 5:25pm in CULM LH3 |
| RECITATIONS: | F: 4:00PM – 5:25PM (H01) or F: 2:30PM – 3:55PM (H03) in FMH 205 | | |

COURSE DESCRIPTION:

This course is survey of the central concepts in the biological sciences with an emphasis on understanding approaches to scientific discovery. 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, especially the OpenStax Biology textbook.

GRADING: Grades are based on 2 Midterm and 1 Final Exam (40%) and a 15 to 20 page term paper (40%). The final 20% of grades are based on participation in the Friday recitation sessions.

| ASSIGNMENT | PERCENTAGE |
|--------------------------|-------------|
| Recitation Participation | 20% |
| Term Paper | 40% |
| Midterms & Final Exam | 40% |
| 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 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) Describe, discuss, and further study the relations between theories, hypotheses, and scientific works in the biological sciences.
- 3) Read and evaluate the quality and relevance of scientific publications and reporting.
- 4) Understand and use strategies for obtaining and using electronic and printed scientific resources:
 - a. Discover and evaluate online resources.
 - b. Make appropriate attribution of sources.
 - c. Integrate information from multiple sources to formulate broader concepts.
- 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.

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COURSE OUTLINE:

| WEEK/DATES | LECTURE TOPICS | RECITATION TOPICS |
|--|---|---|
| Week 1: Introduction * Week 2: Biodiversity | | |
| T: 02 Sept 2014 | Introductory material, expectations, policies, why are we here? | F: 05 Sept 2014: Educational goals and ethics |
| R: 04 Sept 2014 | What is biology and why does anyone care? How to get an A. | |
| T: 09 Sept 2014 | Biodiversity and its consequences | F: 12 Sept 2014: Impacts of biodiversity |
| R: 11 Sept 2014 | Changes in biodiversity over time | |
| Week 3: Evolution * Week 4: Genes | | |
| T: 16 Sept 2014 | The Origin of Species | F: 19 Sept 2014: Human impacts on the biome |
| R: 18 Sept 2014 | Evolutionary processes | |
| T: 23 Sept 2014 | DNA structure and transcription | F: 26 Sept 2014: Impacts on human health |
| R: 25 Sept 2014 | Transmission of information via genetic mechanisms | |
| Week 5: Climate and Carbon * Week 6: Science | | |
| T: 30 Sept 2014 | Effects of climate on organisms | F: 3 Oct 2014: Impacts of carbon on human societies |
| R: 2 Oct 2014 | Carbon and climate | |
| T: 7 Oct 2014 | Scientific approaches | F: 10 Oct 2014: Applying scientific approaches in everyday life |
| R: 9 Oct 2014 | Scientific methods | |
| Week 7: Midterm Exam and Writing Assignment | | |
| T: 14 Oct 2014 | MIDTERM EXAM | F: 17 Oct 2014: Discussion of paper topics |
| R: 16 Oct 2014 | Scientific writing, plagiarism | |
| Week 8: Cell Biology * Week 9: Biological Scale | | |
| T: 21 Oct 2014 | Review of cell biology | F: 24 Oct 2014: Approaches to cell biology |
| R: 23 Oct 2014 | Cell division and meiosis | |
| T: 28 Oct 2014 | Matters of size | F: 31 Oct 2014: Interactions of scale and human activities |
| R: 30 Oct 2014 | Life in moving fluids | |
| Week 10: Behavior in Organisms * Week 11: Nervous Systems | | |
| T: 4 Nov 2014 | What is behavior? | F: 7 Nov 2014: Evolution of human behavior |
| R: 6 Nov 2014 | Mechanisms for the control of behavior | |
| T: 11 Nov 2014 | Biopotentials | F: 14 Nov 2014: Review of Paper Drafts |
| R: 13 Nov 2014 | Muscular and neural systems | |
| Week 12: Disease * Week 13: Midterm and Thanksgiving Break | | |
| T: 18 Nov 2014 | Categories of disease, Modes of transmission | F: 21 Nov 2014: Impacts on approaches to human health |
| R: 20 Nov 2014 | Treatment strategies | |
| T: 25 Nov 2014 | MIDTERM EXAM | F: 28 Nov 2014: Thanksgiving Break |
| R: 27 Nov 2014 | Thanksgiving Break | |
| Week 14: Assessing Scientific Writings * Week 15: Where Do We Go From Here? | | |
| T: 2 Dec 2014 | Science and the public | F: 5 Dec 2014: Review of Paper Drafts |
| R: 4 Dec 2014 | Good paper, bad paper | |
| T: 9 Dec 2014 | Careers in Biology | F: 12 Dec 2014: Reading Day 2 |
| R: 11 Dec 2014 | Reading Day 1 | |
| FINALS | FINAL EXAM WEEK: DECEMBER 15-19, 2014 | |