**Chemical Biology and Evolutionary Medicine**

A Collaborative Liberal Arts Approach to Huntington’s Disease

**Schedule**: Monday – Thursday, 5pm – 7pm, Room 4-144, Attendance Required

**Instructor**: Ariana Boltax ([alb422@cornell.edu](mailto:alb422@cornell.edu))

**Drop-in Hours**:

All drop-in hours will be held during dinner, and alternative meetings can be scheduled upon request.

**Overview**:

All too often biological questions are approached from one angle at a time, yet in a world that is increasingly interdisciplinary, it is necessary to take a variety of approaches. In medicine, a holistic understanding of disease leads to better treatments and faster recoveries. But how do researchers and medical professionals get to that point? What do they need to know? What do they need to test? What critical thinking and problem solving skills are necessary to ask big questions about disease?

Evolutionary medicine uses Darwinian Theory to understand why people get sick. One disease of particular interest in Huntington’s, a devastating neurodegenerative disorder that leaves patients unable to control their movements, their emotions, and, eventually, their minds. This disease is genetic in origin, and there is no known cure. In this course we will embark on a journey to design potential therapeutics for Huntington’s disease. Like scientists, we will tackle this problem by gaining a better understanding of the fundamental biochemical mechanisms of the disease from an evolutionary perspective. A central focus of this course is the development of critical thinking skills and scientific literacy, so we will prioritize depth over breadth.

**Recommended Pre-requisites:**

AP Biology (or equivalent), High School Chemistry

**Learning Goals**, *After completing this course, students should be able to:*

* Recognize the interdisciplinary connections between Biology and Organic Chemistry
* Apply course content to real-world problems in science
* Think critically and scientifically about experimental methodologies
* Actively assess the value of scientific data
* Present research findings in a public forum
* Read and understand professional literature

**Format**:

This is a collaborative, liberal arts course, so all meetings are mandatory and will provide time for students to discuss the material and work together on assignments. This course will culminate with a formal presentation in which students will describe their research over the course of the semester.

**Readings**:

We will be engaging with the course material, in part, through literary and artistic analysis of the following graphic novel. *Novels will be provided*, but some students in the past have purchased their own copy.

Seagle, S. T, Kristiansen, T., *It’s a Bird*, DC Comics, 2004

ISBN-13: 9781401201098

In addition to this graphic novel, you will be exposed to many other forms of written communication about science from the professional literature to the popular literature. All additional required and recommended articles will be available to students online.

**Course Website**

Please check the course website regularly for announcements, reminders, and course materials.

**Evaluation**

Assignments (11 total) 30% Presentation Draft 1 5%

*It’s a Bird* Assignments (4 total) 15% Presentation Draft 2 10%

Attendance/Contributions 25% Final Presentation 15%

**Absence/Late Policy**

Attendance to call course meetings is mandatory. In the event that you need to miss a day, please notify the course instructor via email ([alb422@cornell.edu](mailto:alb422@cornell.edu)).

All assignments are due at the time and in the format indicated here. Late assignments are not accepted and receive no credit.

**Academic Honesty**

The University’s policy on academic integrity is found in the Mind and Hand book. Students who do not follow the University’s expectations face serious penalties that may include failure on the assignment, suspension from the program, and other sanctions.

**Disabilities**

If you are a student with a documented physical, psychological, or learning disability on record and wish to have a reasonable accommodation made for you in this class, please contact the course instructor as soon as possible.

**Schedule of Classes and Assignments**:

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| --- | --- | --- | --- | --- | --- |
| **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** | **Assignments** |
| 7/7  *Class 7:45 – 9p* | 7/8  Assignment 1 | 7/9 | 7/10  Assignment 2  Team-Building | 7/11  *No class* |  |
| 7/14  Assignment 3 | 7/15  DRJ 1 | 7/16 | 7/17  Assignment 4 Jeremy Wolfe | 7/18  *No class*  Var. Activities | ***Assignment 1***  ***Assignment 2***  ***DRJ 1*** |
| 7/21  Assignment 5 | 7/22  DRJ 2 | 7/23 | 7/24  Assignment 6 | 7/25  *No class*  Var. Activities | ***Assignment 3***  ***Assignment 4***  ***DRJ 2*** |
| 7/28  *No class*  Puzzlehunt | 7/29  Assignment 7  DRJ 3 | 7/30  Presentation Draft 1 | 7/31  Assignment 8 | 8/1  *No class*  Field Day | ***Assignment 5***  ***Assignment 6***  ***DRJ 3*** |
| 8/4  Assignment 9 | 8/5  DRJ 4 | 8/6  Presentation Draft 2 | 8/7  Assignment 10  Talent Show | 8/8  *No class*  Field Day | ***Assignment 7***  ***Assignment 8***  ***DRJ 4*** |
| 8/11  Assignment 11 | 8/12  Final Presentationas | 8/13  Final Presentations | 8/14  Final Party  *Class 5 – 6p* | 8/15  *No class* | ***Assignment 9***  ***Final Presentations*** |