

FURMAN UNIVERSITY
Course Proposal

Author Name: Min-Ken Liao

Position and Department: Associate Professor, Biology

Type of Proposal: New course

Course Identifiers

Discipline Prefix: FYW

Catalog Title: Disease and Culture: How disease transforms us

Suggested Title for the Transcript: Disease and culture

Catalog Description

Taught jointly by a biologist and philosopher, this course will introduce students to the biological basis of numerous diseases (including AIDS, tuberculosis, syphilis, plague, malaria, Irish potato blight, etc.) and discuss their social, ethical, and cultural impacts. Lab fee required.

When will the first offering of this course occur (term and year): Fall 2008

Number of credits proposed for the course: 4

Departmental Information

Enter the specific prerequisites to the proposed course:

None

Enter a brief description of the relationship the course will have to the sequence of courses in your department. (Include or describe any overlapping content with other courses):

This course has no relationship to the sequence of courses in the Departments of Biology or Philosophy.

Enter a list of course topics and the approximate percentage of time in the semester you expect to spend on each topic:

TOPIC

TIME

Introduction to the scientific method 5%

Mini-lectures on the biology of the causative agents of selected diseases, various disease causing mechanisms and general concepts of disease cycles (Diseases include tuberculosis, malaria, AIDS, the Irish potato blight, bubonic plague, syphilis, ulcer, cholera, and the Great Influenza. Some diseases will be explored in great detail while some will be examined briefly.) 25%

Discussions and mini-lectures on the cultural impacts of diseases 40%

Writing instruction and feedback 30%

A typical class meets two or three times per week for a total of 150 minutes. Please explain any deviation from this norm:

No deviation. In addition to three regular meetings, this class will have one three-hour laboratory per week.

Who will normally teach this course?

Min-Ken Liao (Biology) and Sarah Worth (Philosophy)

Resources

List possible text(s) by author and title:

Randolph M. Nesse and George C. Williams, Why we get sick: The new science of Darwinian medicine

Irwin W. Sherman, Twelve diseases that changed our world

Abraham Verghese, My Own Country

Sharon Moalem, Survival of the Sickest

Films and plays: And the band played on, Philadelphia, my life as a dog, ghosts (by Henrik Ibsen), La Traviata, La Bohème, and the plaque.

Diana Hacker, A pocket style manual

Enter other resources required (computer hardware/software, videos, films, etc.):

Students will make use of journals, books, and films already existing in or that will be provided by the library.

Will additional funds be required for this course (for example, field trip or workshop training)? If so, explain plans to obtain funds or whether the funds have already been obtained:

The expenses of laboratory in this class will be administered by the Department of Biology, using departmental budget allocations and laboratory fees.

Curriculum Information

Is this course being proposed to fulfill the First Year Seminar program, any Core / Global Awareness (CGA) requirements or the May Experience? yes

If so, specifically identify the requirements to be fulfilled by the course:

- First Year Writing Seminar (FYW)
- Natural World (NW)

Departments and/or programs of study *other than your home department* that should review this proposal:

- Philosophy (major)
-

Enter a brief description of the relationship the course will have to the curricula, such as required course or elective:

This is a FYW (writing intensive First Year Seminar) course with a laboratory component, which will fulfill NW CGA.

First Year Seminar Information

1. What is this seminar about? Provide a brief description that could be included in pre-registration materials.

This course will introduce students to the effects of disease on human culture. Taught jointly by a biologist and philosopher, we will examine the biological basis of a number of diseases (including but not limited to AIDS, tuberculosis, syphilis, plague, malaria, Irish potato blight, and ulcer) and then discuss the social, ethical, and cultural impact each disease has made. The science component of the course will expose students to scientific methods, help them gain deeper understanding of each disease, and provide them hands-on laboratory experiences. The writing/discussion component of the course will encourage students to critically examine and explore each disease topic from different angles, formulate valid arguments, then effectively express personal opinions both written and orally.

2. a. Explain what the students will be doing in your seminar that engages and challenges them.

In this seminar, students will learn how a disease kills and spreads. We will explore different scientific methods in conjunction with understanding various diseases at the molecular, cellular, physiological, and ecological levels. In addition to understanding the diseases themselves, we will look at the way they have impacted the people and cultures affected by them. To engage students, we will use as many real-life, current case studies as possible. For instance, we will examine tuberculosis to engage students to learn about the pathogen that causes it, the history of the disease, and to examine some of the moral questions dealing with the spread of the disease, especially with the current issues surrounding airline travel. This course will encourage students to weave knowledge of different disciplines, instead of compartmentalizing it.

b. How will this seminar teach students to work independently with a variety of sources and acknowledge appropriately the work of others?

Because this seminar will ask students to integrate both the biological and the cultural impacts of disease, students will be asked to integrate a number of different kinds of information. We will rely on biological experiments, research articles, newspaper resources, films, fiction, and non-fiction. Students will each research a disease, present their findings to the class, and write a report on their findings. Students will need to work independently and cite sources correctly.

c. In what ways will this seminar provide opportunities for students to develop proficiency in expository and argumentative writing?

Students will be asked to write a number of different kinds of papers throughout the semester. They will, for instance, be asked to write a scientific report using data from experiments they conduct in a lab, argumentative papers defending various ways that the diseases have been legislated, and they will be asked to write personal narratives in response to the films and novels that we read for class. We will meet with students after each writing assignment to help develop their reasoning and writing skills.

3. a. Please describe how the writing assignments in this seminar will meet the objectives of the FYW objective for writing.

We will assign five papers, three-four pages in length, each assignment dealing with a different aspect of writing. (See 2c) One of these five papers will be the independent research paper due at the end of the semester that the students work on in conjunction with a class presentation. In addition to providing our students writing instructions and assignments, we plan to devote a class period (a 20-minute mini-lecture and an classroom activity) to compare and contrast the styles of scientific writing and humanity writing. Students will learn that the different nature of the scholarly endeavor of scientists and humanists is reflected

on the writing styles.

b. What kinds of assignments will be used to develop students' research skills?

All writing assignments require students to research and evaluate information critically and to use and cite resources accurately. One of the lab sessions will be used to tour the library and to interact with librarians. Additionally, all students will each be assigned a different disease that they will be responsible for researching. In doing so they will encounter research articles, archived reports, reference books, as well as looking critically at films and novels. This course also has a laboratory component wherein students will have hands-on experience on how to conduct original research.

c. If you have identified a source of library support, please indicate below:

I have already talked with the following reference librarian about supporting this seminar:

Victoria Welborn and Mary Fairbairn

I would like to discuss library support with:

No answer provided.

4. Are you interested in coordinating, connecting, or in any way clustering your seminar with other First Year Seminars?

Not the first time we teach the course.

a. If you have already made plans for clustering, please identify the related courses and instructors and describe the rationale for the clustering.

No answer provided.

b. If you would like us to help you make connections to other seminars, please suggest a subject, theme, method, or approach that might serve as a focus for a cluster.

No answer provided.

5. If this is to be a team-taught and/or interdisciplinary seminar please list all involved faculty along with their department affiliation.

Sarah Worth, Philosophy

Min-Ken Liao, Biology

CGA Information

Natural World

What scientific theories concerning the empirical study of the natural world will be covered? Approximately how many class hours will be dedicated to each of these scientific theories?

In this class, the central theme that weaves various scientific theories together is evolution theory. Based on this we will discuss the co-evolution of microorganisms and humans, the impacts of diseases to the genetic polymorphism of human populations, and more. At least one third of the class hours will be used to introduce, examine, and reexamine different scientific theories. With the laboratory hours being factored in, at least three hours per week (one third of class hours per week is about one hour, plus at least two hours of laboratory per week) will be dedicated to scientific theories. That is about a total of 45 hours per semester.

Please describe, and give at least one example of, how you will demonstrate to students on what foundations theories are constructed, how they are applied, and how data is interpreted

Both lectures and experiments conducted in the laboratory will expose students to scientific theories and how they have impacted our lives. In the laboratory, original data will be collected for analysis and interpretation. For example, we will have a laboratory exercise on “Koch’s postulates”, the four criteria needed to establish a causal relationship between a causative agent and a disease. Students will perform experiments to fulfill these postulates, thus learning the foundations of this theory. Additionally, students will perform an epidemiology laboratory exercise to demonstrate how diseases are spread and, based on class data, identify “patient zero.”

Please describe, and give at least one example of, how students will be led to an appreciation of the tentative, progressive, and cumulative nature of scientific knowledge.

Most students think history and culture are the products the cumulative human activities without thinking about how ever-changing scientific knowledge drastically changes our behaviors and worldviews, and how these disease have such an impact on our history and culture.

For example, between the premier of La Traviata (1853) and La Bohème (1896) was the medical discovery of Mycobacterium tuberculosis, the pathogen that causes tuberculosis. The “new” scientific knowledge challenged the belief that tuberculosis was hereditary, as demonstrated in La Traviata, and provided evidence that the disease is contagious, as demonstrated in La Bohème. Another example is syphilis. We owed our thorough understanding of how syphilis spreads and kills to the sacrifice made by hundreds of innocent lives in Tuskegee, AL. A more recent example is the identification of the cause of ulcers. To fulfill Koch’s postulates, two scientists ingested bacterial cultures which they believed to be the causative agents of ulcer. The groundbreaking scientific discovery was accompanied by better treatment regiments for ulcers and a Nobel Prize. However, the ethics of their research was dubious. Through these diseases (and laboratory exercises), students will not only gain appreciation and understanding of scientific knowledge but also examine the cultural, social, and ethical influences of the knowledge.

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