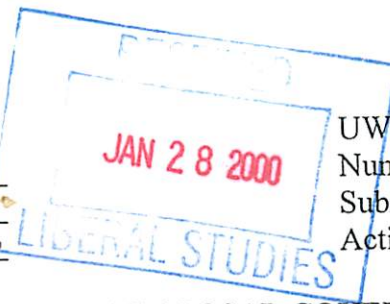


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App 2/24/00

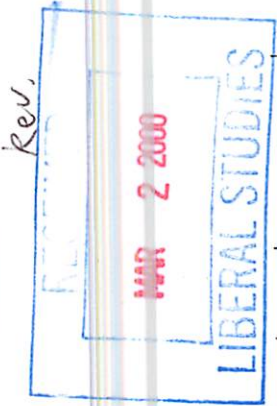
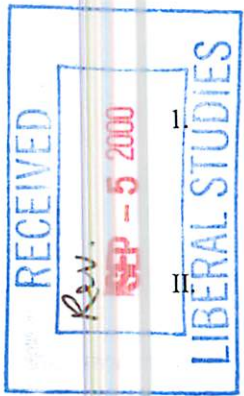


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Submission Date:  
Action Date:

00-14  
99-58  
UWUCC App 9/19/00  
Senate App 10/3/00

### CURRICULUM PROPOSAL COVER SHEET

University-Wide Undergraduate Curriculum Committee



#### I. CONTACT

Contact Person Dr. N. Bharathan Phone 357-2584  
Department Biology

#### II. PROPOSAL TYPE (Check All Appropriate Lines)

- COURSE Understanding HIV Biology and AIDS  
Suggested 20 character title
- New Course\* BI 117 Understanding HIV Biology and AIDS  
Course Number and Full Title
- Course Revision \_\_\_\_\_  
Course Number and Full Title
- Liberal Studies Approval BI 117 Understanding HIV Biology and AIDS  
for new or existing course Course Number and Full Title
- Course Deletion \_\_\_\_\_  
Course Number and Full Title
- Number and /or Title Change \_\_\_\_\_  
Old Number and/or Full Old Title  
New Number and/or Full New Title
- Course or Catalog Description Change \_\_\_\_\_  
Course Number and Full Title

- PROGRAM:  Major  Minor  Track
- New Program\* \_\_\_\_\_
- Program Revision\* \_\_\_\_\_
- Program Deletion\* \_\_\_\_\_
- Title Change \_\_\_\_\_

#### III. Approvals (Signatures and date)

[Signature]  
Department Curriculum Committee

[Signature] 01/27/00  
College Curriculum Committee

[Signature] 2/11/00  
Director of Liberal Studies (where applicable)

W. Barkley Butler  
Department Chair

[Signature]  
College Dean

\* Provost (where applicable)

HIV BIOLOGY and AIDS

B1 117. Understanding HIV Biology and AIDS

3 credits  
3 lecture hours  
0 lab hours  
(3c -01 -3sh)

**Prerequisite:** Non-biology majors and non-biology minors only.

An introduction to the AIDS virus in which the mode of infection, transmission, and prevention will be used as an illustration of biological principles. The course will profile biological indicators for HIV disease and its progression to AIDS. Therapeutic and non-therapeutic approaches to treat HIV infections will be emphasized.

## SYLLABUS

### UNDERSTANDING HIV BIOLOGY AND AIDS

#### BI 117

3 credits: 3 lecture hr: 0 lab hr (3c-0l-3sh)

An introduction to the AIDS virus, mode of infection, transmission, and prevention will be used as an illustration of biological principles. The course will profile biological indicators for HIV disease and progression to AIDS. Therapeutic and non-therapeutic approaches to treat HIV infections will be emphasized.

#### Objectives

As a result of this course

1. students will gain familiarity with common scientific terms in biology that effectively apply to understanding biological principles
2. students will be able to describe important biological characteristics of the retroviruses
3. students will be able to evaluate the common and uncommon modes of transmission of the virus
4. students will be able to recognize the risk(s) involved in unsafe sex and effectively demonstrate an understanding about the ways to prevent transmission
5. students will be able to explain how immune systems function and predict opportunistic infections in immune -suppressed individuals
6. students will be able to demonstrate an understanding on future prospects of experimental biological research to contain HIV transmission
7. students will be able to utilize important values to make informed decisions about AIDS-related issues as they develop in future

#### LECTURE TOPIC OUTLINE

**Note:** The topics are listed in the intended order of presentation. The sequence is based on three one-hour lectures a week in an academic semester of 14 weeks. Four class meetings were allotted for student presentations and three reserved for exams.

##### Lecture 1.

##### **Discovering the Disease Naming the illness**

AIDS a Disease or a Syndrome

Naming of the AIDS Virus: HIV-1, HIV-2, and HTLV-III

Defining the illness: AIDS surveillance

##### Lectures 2 and 3.

##### **The Cause of AIDS**

The Human Immunodeficiency virus (HIV)

Sex and HIV

Evidence that HIV causes AIDS

HIV does NOT cause AIDS: a minority point of view

- Lecture 4.** **Origin of AIDS Virus**  
Biological warfare  
A virus from the Cats and Old World Green monkeys  
UFO's
- Lectures 5, 6, and 7.** **CHARACTERISTICS OF THE AIDS VIRUS**  
Retroviral genome of HIV  
Genetic stability of HIV  
HIV mutations and sources of variants  
Why do some HIV-infected persons live so long?
- Lectures 8 - 10.** **HIV and IMMUNE SYSTEM**  
Basic immune system terminology and mechanism.  
Human lymphocytes: T-Cells and B-Cells  
Antibodies and HIV Disease,
- Lecture 11.** **Exam # 1**
- Lecture 12.** **OPPORTUNISTIC INFECTIONS AND CANCERS ASSOCIATED WITH HIV**  
Tuberculosis, Fungal diseases  
Viral diseases, Protozoa diseases  
Bacterial diseases, Kaposi's sarcoma  
Cervical carcinoma
- Lectures 13-15** **A PROFILE OF BIOLOGICAL INDICATORS FOR HIV DISEASE AND PROGRESSION TO AIDS**  
HIV disease defined  
Stages of HIV disease: Asymptomatic stage,  
Chronic stage, AIDS stage  
Features of HIV pathogenesis  
Potential mechanisms of viral entry, Virus load  
Production of HIV- specific antibodies  
Infection of the Central Nervous System  
Clinical indicators to AIDS diagnosis
- Lectures 16-20** **THERAPY FOR HIV DISEASE**  
General concept for antimicrobial therapy:  
treatment vs cure (Is there a cure?)  
**Non-Vaccine Treatments:**  
Anti-HIV therapies: FDA approved Drugs  
Antibody-based Approach, Protease inhibitors  
**Vaccine development** (Is there a vaccine?)  
Ideal properties of effective vaccine  
Combination drug AIDS therapy
- Lecture 21.** **Exam # 2**
- Lectures 22-26** **TRANSMISSION OF THE HUMAN IMMUNO-DEFICIENCY VIRUS**  
Common modes of transmission HIV  
Casual transmission

	Transmission in household settings Is HIV transmitted by insects or other vectors HIV in blood HIV in genital fluids HIV in saliva and other body fluids Sexual transmission of HIV Maternal-child transmission of HIV Home care prevention Non-casual transmission Unsafe Sex and HIV transmission HIV infection among women
<b>Lectures 27-30</b>	<b>PREVENTING THE TRANSMISSION OF HIV</b> Quarantine principles and practices Barrier to HIV infection How do I protect myself? Safer sex Education WHO role in alternative barrier protection Prevention of injection drug use Blood and Blood product transmission Blood collection and blood screening for HIV Blood transfusion-associated HIV infection Is blood safe? Infection control procedures
<b>Lecture 31:</b>	<b>Exam # 3</b>
<b>Lectures 32-33:</b>	<b>PREVALENCE OF HIV INFECTION AND AIDS CASES IN THE UNITED STATES</b> Risk groups and AIDS cases Preventing HIV infections Health care workers Childbearing women Testing: Who should get tested? What does positive test mean? Detection of HIV infection in newborns
<b>Lectures 34-36:</b>	<b>PREVALENCE OF HIV INFECTION AND AIDS CASES OUTSIDE THE UNITED STATES</b> Global patterns of HIV transmission and prevalence of HIV infection and AIDS AIDS epidemics in Asia, Africa, and the Latin America Economics of preventing HIV infection in developing countries
<b>Lectures 37-38:</b>	<b>Global Strategy to combat the spread of HIV and AIDS</b>
<b>Lectures 39-42:</b>	<b>Student Presentations</b>
<b>Exam # 4</b>	<b>Comprehensive Final Exam will be given during Final's Week</b>

## Evaluation Methods

A. **Examinations (Total = 60%)**

There will be FOUR exams during the course. Each will be worth 15% of the students final grade. Exams will be a mixture of multiple choice, definitions, short answers, and essay questions.

B. **Poster Presentation (10%)**

Students will maintain a portfolio of articles, and relevant information published (during the semester course is being offered) that are directly related to HIV and AIDS. These articles could be collected from variety of sources including clippings from newspapers, news magazines, internet, and other popular health journals. The information will be presented in the form of a poster. The poster will be evaluated for the theme selected, content, and quality of presentation.

C. **One Term Paper (20%)**

Students will be required to write a (10-12 standard double-spaced typed pages) term paper on ONE aspect of HIV or AIDS. In order to maximize student interest, students will be allowed to select topics on related themes. The term paper will be worth 20% of the final grade. There will be a rigid format to which the students must strictly adhere. The instructor will meet with the individual students and together define a term paper topic within the area of special interest. Title on the term paper will be due four weeks after the semester begins. The early deadline requires students to survey the text, literature, internet links, and web sites on related topics soon after the semester begins. The term paper is expected to demonstrate the author's ability to synthesize material from various sources and to think critically about scientific data.

Students will write a rough draft of the term paper and submit it to the instructor about 9 weeks after the semester begins. The instructor will hold an individual conference with each student to discuss the rough draft and make suggestions for revision.

Students will revise the rough draft and turn in the final copy on the day of the oral presentation (about 12 weeks after the semester begins). In its final form, the term paper is to resemble a scientific review article with correct grammar usage, punctuation and spelling as well as scientific terminology.

Copies of All Internet articles and other resources must be submitted with the paper.

No resources with the paper will result in 0 for the paper.

D. **Oral Presentation (10%)**

Students will make one oral presentation from any one of the three suggested non-textbook readings. Students are expected to give brief one page critical review and one page outline of their presentation. The oral presentation will be worth 10% of the final grade. Students will be critical and are expected to focus on the significance of such a study, results obtained, draw conclusions and raise questions and counter arguments. All presentations are expected to last a minimum of 8 minutes followed by 2 minutes of discussion. Students may use note cards, but not read word for word from the cards. Students may use visuals or individual handouts (one for each class member) or make Power Point presentations

**Grading Scale:** Grades will be determined from the total points obtained divided by the total possible points, and expressed on a percentage scale.

A = 89.1-100%    B = 79.1-89.0%    C=69.1-79.0%    D=59.1-69.0%    F= <59.0%

**TEXTBOOK**

ACQUIRED IMMUNE DEFICIENCY SYNDROME by Gerald J. Stine, 4th Edition 1999, Prentice Hall, Englewood Cliffs, New Jersey 07632.

**SUGGESTED NON-TEXTBOOK READINGS**

**ONE OF THE FOLLOWING**

- \*1. The Gender Politics of HIV/AIDS in Women: Perspectives on the pandemic in the United States. 1997. Nancy Goldstein, Jennifer Manlowe, Nancy Goldstone.
- \*2. Healing HIV: How to rebuild your immune System. 1998. Jon D. Kaiser.
- \*3. Gendered Epidemic: Representation of Women in the Age of AIDS.1998.Nancy Roth, and Katie Hogan.

**READINGS ON THE EVOLUTION AND ECOLOGY OF HIV AND AIDS**

The AIDS Knowledge Base. Little, Brown and Co. 1995. P. Cohen, M. Sande and P. Volberding.

History of AIDS: Emergence and Origin of a Modern Pandemic. 1993. Mirks D. Grmek, Russell C. Mantiz, and Jacalyn Duffin.

Guns, Germs, and Steel. Norton, 1997. Jared Diamond

The Social Impact of AIDS in the United States. National Academy Press, 1993. Albert R. Johnson, and J. Stryker.

AIDS: The Burdens of History. University of California Press, 1988. Elizabeth Fee and Daniel M. Fox.

The Mirage of Health. Doubleday, 1959. Rene Dubos.

Man Adapting. Yale University Press, 1965. Rene Dubos.

AIDS and HIV Related Diseases: An Educational Guide.1996. Josh Powell, Amy Bourdeau.

The Invisible Invaders: The Story of the Emerging Age of Viruses. Little, Brown and Co. 1992.

## **BIBLIOGRAPHY**

- Aronstein, D., and Thompson, B. J. (1998). HIV and Social Work: A Practitioner's Guide.
- Bartlett, J.G., and Finkbeiner, A. K. (1998). The Guide to Living with HIV Infection: Developed at the Johns Hopkins AIDS Clinic.
- Fan, H.F., Conner, R.F., and Villarreal, L. P. (1997). The Biology of AIDS.
- Feldman, E. and Bayer, R. (1999). Blood Feuds: AIDS, Blood, and the Politics of Medical Disaster.
- Ford, M. T. (1993). 100 Questions and Answers about AIDS: What you need to know now.
- Goudsmit, J. M. T. (1998). Viral Sex: The Nature of AIDS.
- Huston, R., Berridge, M., and Erridge, M. (1997). A Positive Life: Portraits of Women living with HIV.
- Kaiser, J.D. (1995). Immune Power: The Comprehensive Healing Program for HIV.
- Kearney, B., Mitchell, C.B., and Delaney, M. (1998). The HIV Drug Book.
- Lauritsen, J. (1998). The AIDS War: Propaganda, Profiteering, and Genocide from the Medical Industrial Complex.
- Levy, J.A. (1994) HIV and the Pathogenesis of AIDS.
- Mann, J., Dannel, J., and Trantola, T. (1996). AIDS in the World II: Global Dimensions, Social Roots, and Responses: The Global AIDS Policy Coalition.
- Senechek, D., and Koelling, J. (1997). Placing AIDS and HIV in Remission: A guide to Aggressive Medical Therapy for People with HIV Infection.

## **INTERNET LINKS AND SELECTED WEB SITES**

### UNAIDS

AIDS: News Online Background Briefing

National Institute of Allergies and Infectious Diseases

Center for AIDS Research, University of Alabama

AIDS Web

WWW AIDS Virtual Library

Center for AIDS Prevention Studies

HIV/AIDS Global Information System

<http://medstat.med.utah.edu/webPath/TUTORIAL/AIDS?HIV.html>

[www.thebody.com/aawh/force/aawh10.html](http://www.thebody.com/aawh/force/aawh10.html)

[www.thebody.com/aawh/force/aawh13.html](http://www.thebody.com/aawh/force/aawh13.html)

[www.thebody.com/cdc/livinh.html](http://www.thebody.com/cdc/livinh.html)

[www.cdc.gov/nchstp/hiv\\_aids/pubs/facts/perinatl.htm](http://www.cdc.gov/nchstp/hiv_aids/pubs/facts/perinatl.htm)



**ANSWERS TO COURSE ANALYSIS QUESTIONNAIRE**

- A1. The course is designed to be a 3-credit non-laboratory science course that students may elect to take to fulfill part of their liberal studies requirements for the 4-3-3 science option. It will be exclusively for non-biology majors or non-biology minors. Does not count towards Biology, Bio Ed, or Environmental Health major.
- A2. This course does not require a change in any existing course or program.
- A3. This will primarily lecture oriented course.
- A4. The course titled Understanding HIV biology and AIDS has never been offered at IUP. This course will not be listed as dual-level.
- A5. The course will not be offered for variable credit.
- A6. Several higher education institutions offer a major course required for health care providers and AIDS education requirements mandated for nurses by the state. Few schools like Florida State offer Biology of AIDS for non-biology majors.
- A7. No accredited agency recommends or requires the skills or content of the proposed course.
- B1. The course will be offered by a single instructor.
- B2. The content of this course does not overlap that of any courses offered in other departments.
- B3. There will be seats in this course for continuing education.
- C1. Three complement hours per offering. Faculty resources are currently adequate.
- C2. a. Space: One-average-size classroom per offering, to be used twice a week, current resources are adequate.  
b. Equipment: Standard audio-visual equipment such as an overhead projector and screen, current resources are adequate.  
c. Laboratory Supplies: None needed, since this is a lecture course.  
d. Library Materials: Current holdings are adequate for oral presentations and term papers. If need be, students will be expected to use inter-library loan, and faculty collections to make up any deficiency at IUP library.  
e. Travel Funds: No travel funds are necessary.
- C3. Not applicable. The course is not being funded by a grant.
- C4. It is expected that the course will be offered annually as student demand dictates.

HIV BIOLOGY and AIDS

- C5. It is anticipated that a single section of the course will be offered during any semester
- C6. The course can accommodate a total of 36-48 students. Class size will be limited by the number of student presentations that can be conveniently made in a semester.
- C7. No professional society recommends enrollment limits for a course of this nature.
- C8. The course is designed for non-biology majors and as such will not affect the curriculum requirements for the majors in the Department of Biology.

## ANSWERS TO LIBERAL STUDIES QUESTIONS

- A. Not applicable. This course will be taught by a single instructor
- B. The course is designed to introduce students to the important biological characteristics of the retrovirus, the nature of HIV transmission and AIDS in immune-compromised individuals (may include individuals of all ages, race, gender, and sexual habits and preferences). As a consequence, race and gender will be discussed as topics in reference to this course. Emphasis will be on concepts underlying the interrelation of disease and culture as related to HIV and AIDS. Contributions of women to the field of HIV research, treatment and prevention should become apparent to the students since five of the most eloquent writers on the subject are HIV- positive women (Nancy Goldstein, Jennifer Manlowe, Nancy Goldstone, Nancy Roth, and Katie Hogan) and their books are two of the three possible non-textbook readings to be used for this course.
- C. Students will select ONE of the THREE non-textbook readings listed earlier. The books were chosen primarily for their content and easy style of writing. These books are well researched and give documented historical perspective of the role of society's habits and changes in habits in the development of infectious epidemics in individuals whose immune systems have been compromised. These book collections collectively weave together theoretical, critical, and practical perspectives that govern most HIV/AIDS prevention and treatment efforts. They offer insights necessary to stem the spread of HIV and the role women can play.
- D. The course is not intended as an introduction to biology, but rather designed to introduce the interested non-specialized student with firm overview of AIDS from biomedical and sociological perspectives. The goal is to provide students with a conceptual framework of the issues raised by the AIDS epidemic so that they will be better able to deal with the challenges posed by this disease. This is particularly important since new information about scientific aspects of AIDS appears almost daily; with this information comes new implications for the clinical, social, legal, and ethical aspects of the disease. Framework provided by this course will help students understand and make informed decisions about AIDS, AIDS prevention, and AIDS-related issues as they develop in the future.