

I. CATALOG DESCRIPTION:

A. Division: Science
Department: Biology
Course ID: BIOL 140
Course Title: Biology of Sexually Transmitted Diseases
Units: 2
Lecture: 2 hours
Prerequisite: none

B. Catalog Description:

Social, economic, psychological, medical and legal issues surrounding the sexually transmitted diseases. The pathogenesis, diagnosis and treatment of prominent sexually transmitted diseases including the impact of current biotechnology on vaccine development, treatment and diagnostics. Historical coverage of changing attitudes and measures toward control of the sexually transmitted diseases.

Schedule Description:

Social, economic, psychological, medical and legal issues surrounding the prominent STDs.

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOMES FOR STUDENTS:

Upon successful completion of the course, the student should be able to:

- A. Recognize the symptoms of STDs commonly occurring in the United States.
- B. Describe the social, political, psychological, and economic problems contributing to the epidemic numbers of STD cases nationally.
- C. Compare and contrast eukaryotic and prokaryotic cell structure.
- D. Describe viral structure.
- E. Compare compartmentalization of activities in prokaryotic and eukaryotic cells.
- F. Identify the characteristics of the five kingdoms of living organisms
- G. Formulate and express opinions on legislation governing control of the spread on infectious disease.
- H. Construct diagrams of the reproductive systems of males and females.
- I. Explain the hormonal patterns and how they influence oogenesis and spermatogenesis.
- J. Outline the female menstrual cycle and the hormone influences.
- K. Construct a diagram illustrating the steps and pathways of host defenses.
- L. Differentiate the mechanisms of action of cellular and humoral immunity.
- M. Compare, contrast, and evaluate the methods of diagnosis, treatment, and prevention of STDs.
- N. Construct a narrative outlining the historical events leading to today's strategies for STD control.
- O. Explain the differences in group behavior and their impact on the prevalence of STD in that group; to include, women, homosexuals, prostitutes, and adolescents.
- P. Describe the role of war and national defense on the development of control measures for STD.

IV. CONTENT:

- A. Socioeconomic impact of STD
 - 1. the public interest in a private disease
 - 2. the scientific method at work
- B. History of efforts to control STDs

1. rise and fall of health related organizations
2. influence of war and other concerns of national security on funds for research, education and preventive measures in the field of STD
3. evolution of the specialty
4. changing medical and societal attitudes
- C. Behavioral Factors (psycho-social) and Epidemiological Aspects of STD
 1. human sexuality
 2. STD and specific populations
 - a. STD and women
 - b. STD and the military
 - c. STD and adolescence
 - d. STD and the gay community
 - e. STD and prostitutes
- D. Cell and virus structure
 1. prokaryotic and eukaryotic cell comparison
 2. organelle microstructure and function
 3. virus structure
- E. How cells communicate with each other
 1. mediators
 2. hormones
 3. cell receptors
- F. Classification
 1. the five kingdoms and their characteristics
 2. comparisons of eukaryotic and prokaryotic pathogens
 3. Hierarchy of classification
 4. virus classification
- G. Innate defenses
 1. chemical and physical barriers
 2. non-specific cellular defenses
- H. The Immune Response
 1. the immune system
 2. humoral immunity
 - a. antibody structure and classes
 - b. antibody function
 3. cell-mediated immunity
 - a. T cell subpopulations and functions
 - b. major histocompatibility complex and the T cell antigen receptor
 - c. T cell protection
- I. Male and female reproductive systems
- J. Hormone influences on spermatogenesis, oogenesis and the menstrual cycle
- K. The biology, pathogenesis, epidemiology, diagnosis, treatment and prevention of the STDs
 1. gonorrhea
 2. syphilis
 3. lymphogranuloma venereum
 4. chancroid
 5. granuloma inguinale
 6. bacterial vaginosis
 7. nongonococcal urethritis
 8. bacterial GI blues
 9. herpes
 10. cytomegalovirus
 11. condylomata acuminatum
 12. hepatitis
 13. molluscum contagiosum

14. AIDS
 15. trichomoniasis
 16. giardiasis
 17. amebiasis
 18. yeast infections
 19. helminthe infections
 20. ectoparasites
- L. Legal aspects of STD
1. what we can and can not do
 2. laws on the books
 3. reportable diseases
- M. STD Control
1. surveillance
 2. patient counseling
 3. managing the sex partner
 4. local, regional and national levels of control
 5. international cooperatives

V. METHODS OF INSTRUCTION:

- A. A lecture format is the foundation of delivery of information. It is complemented with questions to promote critical thinking and problem solving. The textbooks illustrations are utilized in class to emphasize the subject and to assist students in interpretation of reading materials.
- B. Short discussion sessions are utilized to emphasize involved concepts. After an introduction and explanation of a complex topic, students are placed in small groups to explain the concept to each other and discuss any problems. This is particularly helpful with students who are hesitant to interact with the instructor.
- C. Videos, computer slide presentations are used to illustrate signs and symptoms of disease.
- D. Laboratory demonstrations – This class is strictly a lecture course but the use of microscopic slide presentations are a valuable complement to the lecture and are used to emphasize the size and structure of various pathogens and cell types covered in the lecture material. Stations are set up in a lab with card explanations about what they are viewing at each station. Students are required to draw and label the specimens.
- E. Written assignments are made on topics that are selected by the interest shown by the class. The subject of STD is emotional as well as biological and students can sometimes best express themselves by writing down their feelings and thoughts. Movies that cover the emotional, legal and political aspects of STD are assigned. In class writing assignments will often surround the viewing of these movies.
- F. Model and chart examinations – These are additions to small student groups for illustration and study of the reproductive anatomy and the menstrual cycle.
- G. Games demonstrating STD transmission and diagnosis are used to practice their skills in these areas.

VI. TYPICAL ASSIGNMENTS:

- A. A Night on the Town – In class assignment where each student receives a numbered test tube of solution. One student in the class unknowingly has a test tube with an indicator in it that will change color on the addition of a developer solution. Each student in turn selects another student in the class to share their solution with. This is accomplished by depositing one pipette full (approximately 1 ml) into the recipients tube. Each student takes their turn until everyone in the class has shared twice. A running “share” list of numbered tubes is put on the board so that everyone can see what number gave to which other numbered tube. Then the instructor drops developer into each student’s tube to see which numbered tubes have the color

change or "is infected." Positive tubes are indicated on the board next to the number on each cycle of sharing (two cycles). Homework is to identify the source of the infection and its route of transmission. Class discussed the results and the psychological feelings of fear and anxiety they had while performing the exercise.

- B. A written critique is required of assigned movies covering political and the social impacts of sexually transmitted diseases. These movies are reserved in the learning center for viewing. Students must retrieve a signed slip from the learning center personnel indicating they have viewed the video.
- C. Written assignments are designed as necessary to emphasize a particular lesson presented in class. Assignments are made on viewing of specific videos that are on reserve in the learning center and on news articles that the instructor shares with the class. Research advances are also shared with the class and they are asked to share their opinion. Short studies based on student investigations of a topic are also used for written assignments. For example one year, students did a survey of the local schools to see what type if any sex education was offered and if STD was also covered. The study required an analysis of the length of the offering, the instructor's credentials and the target student's age at instruction.

VII. EVALUATION:

- A. Methods of Evaluation
 - 1. Written assignments are made to assist students in both communication skills and to allow them to express themselves on sometimes controversial and emotional subjects. Papers are 1-2 typed pages and they are graded on content as well as grammatical accuracy.
 - 2. Proof of viewing videos as assigned
 - 3. Grading of color book assignments
 - 4. Objective and subjective examinations
 - a. Typical questions
 - (1) A "magic bullet" in medical terminology refers to a mythical bullet used to destroy evil spirits that make us sick. True/False? Explain.
 - (2) An expectant mother with a history of herpes simplex virus infection must be treated before delivery to prevent shedding. True/False? Explain.
 - (3) HIV infection and AIDS are equivalent states. True/False? Explain.
 - (4) Discuss the impact of STD infections on social norms and legal issues.
- B. Frequency of Evaluation
 - 1. An exam is administered every 3-4 weeks.
 - 2. Written assignments are given to reinforce a concept, as a class research topic and/or as a tool to provide an avenue of expression for students on an exceptionally delicate or emotional subject. They usually number between 4-7 out of class assignments each semester.

VIII. TYPICAL TEXTS:

Wisteich, George. The Sexually Transmitted Diseases. Wm. C. Brown Publishers, 1997.

Holmes, et.al. Sexually Transmitted Diseases, 3rd Edition. McGraw Hill, 1999.

Stine, Gerald. The Biology of Sexually Transmitted Diseases. McGraw Hill, 1998.

IX. OTHER SUPPLIES REQUIRED OF STUDENTS:

A medical dictionary is recommended.