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CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. CONTACT

Contact Person Allan T. Andrew Phone 2750

Department Biology

II. PROPOSAL TYPE (Check All Appropriate Lines)

COURSE Medical Micro

New Course* BI 363 Medical Microbiology

Course Revision _____

Liberal Studies Approval+
for new or existing course _____

Course Deletion _____

Number and/or Title Change _____

Course or Catalog Description Change _____

PROGRAM: Major Minor Track

New Program* _____

Program Revision* _____

Program Deletion* _____

Title Change _____

III. Approvals (signatures and date)

Robert P. Gendron
Department Curriculum Committee

Thomas J. [Signature]
College Curriculum Committee

+ Director of Liberal Studies (where applicable)

[Signature]
Department Chair

John D. [Signature]
College Dean

*Provost (where applicable)

Course Syllabus

I. CATALOG DESCRIPTION

BI 363 Medical Microbiology

3 credits
2 lecture hours
3 lab hours
(2c-3l-3sh)

Prerequisites: BI 250 or permission

Study of disease caused by microorganisms with emphasis on human pathogens. Both epidemiology and aspects of host-parasite relationships will be discussed. Lab stresses methods of isolation and identification of pathogens.

II. COURSE OBJECTIVES

1. Students will learn the unique and fundamental properties of microorganisms.
2. Students will gain an understanding of the host-parasite relationship.
3. Students will learn the major groups of pathogenic microorganisms and the role they play in human disease.
4. Students will demonstrate an understanding of the transmission, diagnosis and treatment of pathogenic microorganisms.
5. Students will learn and demonstrate techniques used to identify the major groups of pathogenic microorganisms, with special emphasis on bacteria. This will include use of computers for identification.

III. COURSE OUTLINE

- A. Introduction (1 lecture)
 1. Historical Developments in Medical Microbiology
 2. Classification of Microorganisms
- B. Control of Microorganisms (3 lectures)
 1. Physical Agents
 2. Disinfectants
 3. Chemotherapeutic Drugs
- C. Pathogenic Microorganisms and Disease (3 lectures)
 1. Microbial Virulence
 2. Host Defense Mechanisms

- D. Pathogenic Bacteria (10 lectures)
 - 1. Gram Positive Cocci
 - 2. Gram Negative Cocci
 - 3. Enterobacteriaceae
 - 4. Pseudomonas
 - 5. Vibrionaceae and Campylobacter
 - 6. Pasteurella
 - 7. Haemophilus, Bordetella, and Brucella
 - 8. Bacillus and Clostridium
 - 9. Legionella
 - 10. Mycobacterium and Related Organisms
 - 11. Spirochetes
 - 12. Mycoplasma and Ureaplasma
 - 13. Rickettsia and Chlamydiae
- 3. Medical Mycology (3 lectures)
- 4. Medical Parasitology (3 lectures)
- 5. Medical Virology (3 lectures)

LABORATORY SEQUENCE: The laboratory sequence outlined below is only one possible sequence. It is anticipated the sequence will change after the course is taught several times.

WEEK 1: The Gram-positive cocci

1. *Staphylococcus*
2. *Streptococcus*

WEEK 2: The Gram-negative cocci and coccobacilli

1. *Neisseria* and *Moraxella*(*Branhamella*) *catarrhalis*
2. *Moraxella* and *Acinetobacter*

WEEK 3: The *Enterbacteriaceae*

WEEK 4: The *Enterbacteriaceae*(continued)

WEEK 5: *Pseudomonas* and *Campylobacter*
First unknown

WEEK 6: *Haemophilus* and *Bordetella*

WEEK 7: *Clostridium* and *Bacillus*

WEEK 8: *Legionella pneumophilia* and Family *Legionellaceae*

WEEK 9: *Mycobacterium* and *Corynebacterium*
Second unknown

WEEK 10: *Mycoplasma*
Pathogenic yeast-like fungi

WEEK 11: Miniaturized multitest methods for identifying Enterics

WEEK 12: Use of computer programs for identification.

WEEK 13: Continue above

WEEK 14: Clean-up etc.

Laboratories will involve methods of isolation and identification of the various groups of organisms.

IV. EVALUATION METHODS:

The final grade for the course will be determined as follows:

- 75% Test: Three tests (two during the semester and a comprehensive final) consisting of completion and short essay. Tests during the semester will be 100 points each, the final 150 points. Tests will incorporate laboratory material as well as lecture material. Tests will be primarily essay.
- 15% Paper: Students will be required to write a 10-15 page paper on a current topic in medical microbiology. The student must discuss the topic of the paper with the instructor to make sure it is appropriate.
- 10% Unknowns: Two unknowns will be identified during the semester. Each unknown will be worth 20 points. Total of 40 points.

Grading Scale: 90 and above A; 80-89 B; 70-79 C; 60-69 D; below 60 F

V. REQUIRED TEXTBOOKS AND SUPPLEMENTAL READINGS:

Textbook: Murray, P.R. et al. Medical Microbiology 2nd Edition. C.V. Mosby Company. St Louis, MO 1994.

Lab Manual: Laboratory book to be decided later.

Supplemental Readings: Morbidity and Mortality Weekly Report (MMWR)

VII. BIBLIOGRAPHY

Baron, Ellen Jo, Lance Peterson and Sydney Finegold. 1994. *Bailey and Scotts Diagnostic Microbiology*, 9th ed. C.V. Mosby Company, St. Louis, MO.

Mims, Cedric et. al. 1993. *Medical Microbiology*. C.V. Mosby Company, St. Louis MO.

Salyers, Abigail, and Dixie Whitt. 1994. *Bacterial Pathogenesis. A Molecular Approach*. ASM Press, Washington, DC.

Sherris, John C., Ed. 1990. *Medical Microbiology. An Introduction to Infectious Disease*. Appleton & Lange, Norwalk, Connecticut.

Journal of Clinical Microbiology, American Society for Microbiology.

Clinical Microbiology Reviews, American Society for Microbiology.

Clinical and Diagnostic Laboratory Immunology, American Society for Microbiology.

CATALOG DESCRIPTION

BI 363 Medical Microbiology (2c-3l-3sh)

Study of disease caused by microorganisms with emphasis on human pathogens. Both epidemiology and aspects of host-parasite relationships will be discussed. Lab stresses methods of isolation and identification of pathogens.

Prerequisites: BI 250 or permission

Course Analysis Questionnaire

A. Details of Course

A1. At the present time, no undergraduate pathogenic/medical microbiology course is being taught in the department. This course would provide additional background to students who are interested in the health and health related fields. The course would be designed for Biology majors; however, students in Medical Technology or Environmental Health would also have an interest in this course.

This will not be submitted as a liberal studies course.

A2. No.

A3. The course was offered as a Special Topics in the spring of 1993. When offered there were 14 students enrolled.

A4. No.

A5. The course will not be taught for variable credit.

A6. Other colleges and universities teach courses in Medical Microbiology. For example, University of Pittsburgh, Pennsylvania State University, Utah State University, Clarion University.

A7. No. This course is not required by any professional society.

B. Interdisciplinary Implications

B1. The course will be taught by one instructor.

B2. No other departments teach a course in Medical Microbiology.

B3. Yes. If they meet the prerequisites.

C. Implementation

C1. Since the course has already been taught as a Special Topic within the department, faculty load should not be a problem.

C2. Space is adequate. Equipment is adequate for course. The course will cost approximately \$1200.00 per year in consumable supplies and materials. This cost is based on two laboratory sections. However, due to the nature of the supplies used in the course, the cost for one lab section would not be significantly reduced. Bacteriological media is purchased in set amounts (1 kg.

etc.) The cost for a unit of media is the same for one or two lab sections. Library offerings are adequate. No travel funds will be needed. Resources within the department will be sufficient to cover the course.

- C3. The course will not be funded by a grant.
- C4. The course will be offered once a year during the fall semester.
- C5. One lecture section and one or two laboratory sections.
- C6. Laboratory size will be restricted to 16 students. I would anticipate one lab section. If there is the demand, enrollment could be increased to 32. I would not want more than 32 in the class, if possible.
- C7. No

D. Miscellaneous

Approximately 10 years ago, Dr. Ciskowski and I submitted a course in Pathogenic Microbiology and Immunology to the Biology Department Undergraduate Curriculum Committee. At that time the course was put on hold since there was no dedicated pathogenic laboratory facility. Since then Weyandt 225 has been outfitted as a Class II facility (Biosafety Level 2: Practices, equipment, and facilities are applicable to clinical, diagnostic, teaching and other facilities in which work is done with the broad spectrum of indigenous moderate risk agents present in the community and associated with human disease of varying severity. Level 2 requires laboratory coats; decontamination of infectious waste; limited access; protective gloves and biohazard warning signs as indicated. There is partial containment equipment used to conduct mechanical manipulative procedures that have a high aerosol potential that might increase the risk of exposure to personnel). Since an appropriate lab is now available, a Medical Microbiology course is being submitted.

The Biology Department is currently revising its curriculum. In the new curriculum, the course will fit in as an upper level elective since most (if not all) Biology majors will have taken an introductory microbiology course as part of the diversity package.