Catalog description:
This course is designed for majors in Nursing, Nutrition, and pre-pharmacy majors who are not Biology majors. It describes microorganisms, their characteristics, isolation, growth, and application to public health, foods, and industry. Prerequisite: CHEM 1302 or CHEM 1320. Fee. (Fall, Spring)

Students must take BIOL 2474 lecture concurrently with one of the lab sections: BIOL 2474 – L1, BIOL 2474 – L2.

Context:
A. Prerequisites: CHEM 1302 or CHEM 1320 (Biological Chemistry II)

B. How course fits within the curriculum: This is a required lower division course for majors in Nursing and Nutrition Dietetics. It satisfies the requirement for microbiology for Pre-Pharmacy. It does not satisfy the requirement for microbiology for majors in Biology.

C. Course audience: This course is intended for majors in Nursing and Nutrition Dietetics. Majors in Biology, Nutrition Science, Environmental Science, and other natural sciences should take General Microbiology (BIOL 3471).

Course overview:
A. Cognitive elements/thematic expectations/skills development: The content of this course will be examined by lectures, discussions and laboratory activities. Students will be engaged in the following levels of thinking: knowledge, comprehension, application, analysis, and evaluation.

B. Requirements essential to the course: The following topics will be presented: the history and scope of microbiology, microscopy, structure of microbial cells, microbial nutrition and growth, microbial metabolism, microbial molecular genetics, DNA technology and genomics, virology, survey of microorganisms, microbial ecology, immunology, microbial diseases, food and industrial microbiology. Readings from the text will be assigned.

Outcomes of the course:
Successful students will demonstrate comprehension of the following list of learning objectives. Detailed learning objectives are given in the required text as headers for individual sections of each chapter. The methods used to assess learning in the lecture are written tests and a comprehensive final exam.

1. Describe the major classes of microorganisms and their properties.
2. Comprehend microbial growth and its control.
3. Understand basic principles of microbial genetics and their relationship to control of infectious diseases.
4. Understand the prevention, causation, detection, and treatment of infectious diseases.
5. Name the major human pathogens and the diseases that they cause.
6. Apply understanding of microbial growth for the sanitary preparation of food.
Process Knowledge: The methods used to assess learning in the laboratory are written laboratory reports for each exercise and written exams.

1. Apply skills in microscopy to the observation of microorganisms.
2. Utilize the Gram stain procedure to visualize differences in the two major classes of bacteria.
3. Apply skills in aseptic procedure to the culture and analysis of microorganisms.
4. Apply skills in the streak plate method to the isolation of a pure culture of bacteria.
5. Utilize serial dilution and the spread plate method to determine the number of bacteria in a sample.
6. Apply skills in aseptic procedure to the transformation of bacteria with DNA.
7. Analyze the requirements for carbohydrates, oxygen, and temperature for bacterial growth.
8. Utilize the Enterotube method to assess the metabolic characteristics of enteric bacteria.
9. Assess the effectiveness of disinfectants and antiseptics for controlling the growth of bacteria.
10. Utilize the plaque assay to determine the number of infectious particles in a preparation of bacterial viruses.
11. Utilize the enzyme linked immune-sorbent assay (ELISA) to measure the binding of an antibody to an antigen.
12. Apply skills in aseptic technique to the isolation and characterization of bacteria from the skin and mouth.
13. Utilize the Kirby-Bauer method to determine the sensitivity of bacteria to antibiotics.
14. Utilize serial dilution and the spread plate method to determine the number of bacteria in a sample of a food product.

E. Academic honesty: The highest standards of academic honesty are expected in the course. Forms of academic dishonesty include, but are not limited to cheating, plagiarism, counterfeit work, falsification of academic record, unauthorized reuse of work, theft, collusion. See the student handbook for definitions and procedures for investigation of claims of academic dishonesty.

F. Disability Accommodations:
The University of the Incarnate Word is committed to providing a supportive, challenging, diverse and integrated environment for all students. In accordance with Section 504 of the Rehabilitation Act – Subpart E and Title III of the Americans with Disabilities Act (ADA), the University ensures accessibility to its programs, services and activities for qualified students with documented disabilities.

For more information, contact:
Student Disability Services
Administration Building, Suite 105
Ph. (210) 829-3997
Fax (210) 829-6078
Website: http://www.uiw.edu/ada/

Michelle C. Beasley
University of the Incarnate Word
Coordinator - Student Disability Services
Email: beasley@uiwtx.edu
SDS Website: http://www.uiw.edu/sds/