



Biology Health and Wellness Discipline

MCB 2013, MICROBIOLOGY

PREFACE TO THE OBJECTIVES

Microbiology is the study of the microscopic organisms or microorganisms. They are the microbes of vernacular expressions. For the most part, they are included among the groups of living things known as the molds, yeasts, protozoan, algae, bacteria and viruses.

In relation to we human beings, microorganisms may be categorized as beneficial or harmful. Most of the microbes are beneficial and useful. As such, they act as the decomposers of dead organic material; through their photosynthetic efforts oxygen and basic foodstuffs are provided, and their efforts in fermentative and other biochemical processes provide us with many food products such as bread and cheeses as well as other products such as leather, tobacco, alcohol and antibiotics. The harmful category contains many plant and animal pathogens and opportunists, the causative agents of infections and diseases. Other harmful ones would include those microbes that cause food to spoil.

Microorganisms form interrelationships with human beings that are of great ecological, economic and survival importance. This first course in microbiology is designed to elucidate these interrelationships and in so doing emphasize the importance of microorganisms in the everyday lives of we human beings.

Prerequisite to enrolling in microbiology are chemistry for health and related services with laboratory (CHM 1030 and CHM 1030L) and one semester (or term) of a college biology course. Co-requisite to microbiology (MCB 2013) is enrollment in microbiology laboratory (MCB 2013L).

The minimum acceptable performance in this course is achievement of a score of 60%. The objectives are written at the A level so that a student who demonstrates a competence of 90-100% of the questions asked in relation to these objectives will be considered an outstanding student.

Specifics related to examinations, schedules, and types and lengths of questions will be made available in the course policy statement of the instructor who teaches the particular section in which the student is enrolled. Grades will be determined by instructor-designed examinations. Additionally, some instructors may require discussion participation, workbook evaluation, term papers or other forms of classroom activities to evaluate a student's understanding of microbiology. These requirements would be included in the policy statement provided by the instructor.

AFFECTIVE OBJECTIVES

The student will demonstrate an awareness of current developments in microbiology and related fields by daily searching newspapers and magazines for articles of this nature and bring such articles to class so that the information can be communicated to others via the "What's New in Microbiology" bulletin wall located near the laboratory.

COGNITIVE OBJECTIVES

The student will demonstrate:

1. A comprehension of microbiology by listing and classifying the organisms included in the subject area, by describing the place of microbiology in the biological sciences, and explaining its importance in the fields of the health sciences.
2. A knowledge of the development of microbiology by describing or explaining the contributions made by certain scientists, for example, Leeuwenhoek, Pasteur, Koch, Lister, and Jenner.
3. A comprehension of the organisms included in the subject area of micro-biology by classifying these organisms into groups such as Fungi, Platy-helminthes, Nematode, Protista, Monera and Vira.
4. A knowledge of the major characteristics of microbes by describing or explaining such characteristics as their morphology and their reproductive life cycles.
5. A knowledge of microbial life functions by describing or explaining such functions as metabolism and growth, among others.
6. A comprehension of microbial genetics and species differentiation by defining or describing such terms as transduction, recombination, reconstitution, colony, variants and mutation.
7. A knowledge of microbial environments by describing or explaining the effect of the environment upon microbial growth in nature as well as in the laboratory cultures.
8. A knowledge of the microbes useful to mankind by classifying them and describing or explaining their actions in certain processes, for example, fermentation and decomposition.
9. A knowledge of microbes that are not useful or deleterious to mankind by classifying them and describing or explaining their actions in such processes as food spoilage and disease.

10. A comprehension of the principles of microbial control by describing or explaining these principles, for example, coagulation of protein and inhibition of enzymes.
11. A knowledge of the practical application of the principles of microbial control by describing or explaining such applications as sterilization, disinfection and chemotherapy.
12. A knowledge of the transmission of infection and disease by describing or explaining such processes as communicability, contagion, carriers and other vectors.
13. A knowledge of pathogenic mechanisms by describing or explaining such factors as virulence, infective dose, portal of entry, and host resistance.
14. A knowledge of immunology by describing or explaining such processes as active and passive immunity, specific and non-specific resistance, antigen antibody reactions and hypersensitivity.
15. A knowledge of the control of infectious diseases or Nosacomial diseases and similar institutions by describing or explaining the procedures applied in maintaining this control, for example, sterilization, disinfecting, sanitation and staff regulations.
16. His comprehension of diseases caused by microbes by listing the microbes and the specific diseases they produce, for example, *Entamoeba histolytica* which produces amoebic dysentery and *Neisseria gonorrhoea*, which causes gonorrhoea.
17. A knowledge of certain microbial diseases for example, syphilis, food poisoning, and typhus by describing or explaining how they are transmitted, their diagnosis and clinical course, their immunology, the therapy that could be used, and how they are prevented.