Microbiology 260
Spokane Falls Community College
Course Information Sheet

Text Book: Microbiology: A Systems Approach, 2nd Ed. Cowan and Talaro. McGraw Hill

A. Course Title: General Microbiology 260

B. Prefix and Course Number: Mbiol 260

C. Number of Credits: 5

D. Lecture/Lab Hours: 33 hours - Lecture
44 hours - Lab

E. Prerequisites: **Biol 160**, **highly recommended Chem 121**

F.
- Course Description: Introduction to the study of bacteria, viruses, fungi and protozoa with emphasis on microbial structure, physiology, genetics, physical and chemical control and the role of microorganisms in disease and immunology.
- Laboratory includes staining, media making, isolation, cultivation and identification techniques of bacteria.
- Meets A. A. degree lab science requirement.

G. Learning/Performance Expectations: By the end of the quarter, each student should be able to:
- Explain the differences between eucaryotic and prokaryotic cells.
- Describe the different types of microorganisms and their classification.
- Describe the cellular morphology and anatomy of bacteria.
- Describe the growth requirements of bacteria.
- Describe bacterial metabolism and how it relates to microbial growth.
- Describe principle and methods of controlling microorganisms.
- Describe the structure, classification, and replication of viruses.
- Describe the basic principles of microbial genetics.
- Describe the roles that microorganisms play in natural and human-controlled processes.
- Describe the roles that microorganisms play in the etiology of disease.
- Describe the principles of infection control.
- Describe non-specific and specific host defenses against microorganisms.
- Gain experiences in the use of the microscope for observation.
- Gain experience in laboratory procedures.
- Successfully practice aseptic technique.
- Successfully demonstrate basic microbial cultivation and staining techiques.
- Gain experience in working independently and collaboratively in a laboratory setting.
- Gain experience in gathering and interpreting data.

H. Major Topics to be Presented:

I. Introduction to Microorganisms.
II. Macromolecules of Life.
III. Microscopy.
III. Bacterial Morphology and Cellular Anatomy.
IV Microbial Metabolism.
V. Growth requirements and Cultivation of Bacteria.
VI. Microbial Genetics.
VII. Control of Microorganisms.
VIII. Viruses.
IX. Drugs, Microbes, Host - The elements of Chemotherapy
X. Immunology and Host Defenses.

I. Course Outline:

I.. Introduction to Microorganisms (Chap 1)

A. Historical people of Microbiology.
B. Types of microorganisms.
C. Classification.
D. Nomenclature of Bacterial.
E. Comparison of prokaryotic and eucaryotic cells.

II. Chemistry of Microbiology (Chap 2)

A. Atoms & molecules
B. Chemical bonds
C. Chemical reactions
D. Water chemistry
E. Macromolecules of life.

III. Microscopy (Chap 3)

A. Principles of microscopy.
B. Types of microcopy.
C. Specimen preparation for microscopy.

IV. Bacterial Morphology and cellular Anatomy (Chap 4)

A. Bacterial cellular morphology.
B. Bacterial cellular anatomy.

V. Microbial metabolism (Chap 8)

A. Enzymes.
B. Catabolic pathways.
C. Aerobic respiration
Anaerobic respiration and fermentation pathways.
Ancillary respiratory pathways

VI. Growth requirements and reproduction of Bacterial (Chap 7)
- A. Nutritional requirements.
- B. Environmental requirements.
- C. Media preparation.
- D. Pure culture techniques
- E. Reproduction of Bacteria.
- F. Growth of a Bacterial population.
- G. Methods of monitoring bacterial growth

VII. Microbial Genetics (Chap 9)
- A. DNA replication and Protein synthesis.
- B. Mutations.
- C. Transfer of DNA between bacteria.

VIII. Control of Microorganisms (Chap 11)
- A. Physical methods and chemical controls for microorganisms
- B. Principles of disinfection and antisepsis.
- C. Antibiotics and antibiotic susceptibility testing.

IX. Viruses (Chap 6)
- A. Structure.
- B. Classification.
- C. Replication of bacteriophages.
- D. Replication of animal viruses

X. Drugs, Microbes, Host - The elements of Chemotherapy (Chap 12)
- A. Principles of Antimicrobial agents
- B. Interactions between drug and microbe
- C. Survey of major antimicrobial drug groups
- D. Interaction between drug and host

XI. Innate and Adaptive Immunity (Chap's 14 & 15)
- A. Pathogenesis of bacterial infections.
- B. Normal microbial flora of humans.
- C. Non-specific host resistance.
- D. Specific host resistance
- E. Active and passive immunity.
- F. Humoral and cell-mediated immune responses.
- G. Antigen-antibody interactions.