

Study Guide for First Exam  
BIO220  
Chapters Covered: 1 – 4

**Definitions**

Microorganism	Monomer	Diffusion
Pathogenic	Denaturation	Osmosis
Genus	micrometer	Facilitated Diffusion
Species	nanometer	Plasmid
Prokaryote	Light Microscopy	Inclusions
Eukaryote	Resolution	Endospore
Atoms	Electron Microscopy	
Molecule	Staining	
Atomic Number	Mordant	
Atomic Weight	Differential Stain	
Isotope	Binary Fission	
Synthesis Reaction	Glycocalyx	
Decomposition Reaction	Flagella	
Exchange Reaction	Pilus	
Acid	Fimbriae	
Base	Peptidoglycan	
Buffer	Mycolic Acid	
Polymer	Selective Permeability	

**Concepts**

1. Understand the conventions for naming microorganisms and be able to recognize a properly formatted name.
2. Be able to name the major categories of microorganisms and list two characteristics for each.
3. Understand the Three Domain concept of classification and how it differs from the Five Kingdom system.
4. Be able to link names of major scientists in microbiology with their discoveries.
5. Understand the basic subatomic structure of an atom and be able to draw a diagram given the atomic number and atomic weight.
6. Understand the difference between an ionic, covalent, and hydrogen bond.
7. Be able to explain why water is important to life.

8. Understand the basic chemistry of carbohydrates, proteins, lipids, and nucleic acid, and tell them apart.
9. Be able to draw a peptide bond.
10. Understand the four levels of protein structure.
11. Understand schematics for generalized light and electron microscopes and be able to name the major components.
12. Be able to describe the Gram Stain and its purpose.
13. Be able to list the three major classes of bacterial shape, the subtypes and draw representative images.
14. Given a diagram be able to label the major features of the bacterial cell.
15. Be able to draw a schematic and know the differences between a Gram-positive and Gram-negative cell.
16. Understand the Fluid Mosaic Model and be able to interpret a diagram of a plasma membrane.
17. List the three types of Passive Transport.
18. Be able to identify structures on a picture of a eukaryotic cell (i.e. Figure 4.22)
19. Know the Endosymbiotic Hypothesis.