**General Instructional Objectives**

**Chapter 19: Lipds**

**19.1 Structure and Classification of Lipids**

**19.2 Fatty Acids: Lipid Building Blocks**

**19.3 Physical Properties of Fatty Acids**

**19.4 Energy-Storage Lipids: Triacylglycerols**

**19.5 Dietary Considerations and Triacylglycerols**

**19.6 Chemical Reactions of Triacylglycerols**

**19.7 Membrane Lipids: Phospholipids**

**19.8 Membrane Lipids: Sphingoglycolipids**

**19.9 Membrane Lipids: Cholesterol**

**19.10 Cell Membranes**

**19.11 Emulsification Lipids: Bile Acids**

**19.12 Messenger Lipids: Steroid Hormones**

**19.13 Messenger Lipids: Eicosanoids**

**19.14 Protective-Coating Lipids: Biological Waxes**

**Chemistry at a Glance: Types of Lipids and How They Function**

**Chemical Connections: The Fat Content of Tree Nuts and Peanuts; Artificial Fat Substitutes; The Cleansing Action of Soap; Trans Fatty Acids and Blood Cholesterol Levels; Steroid Drugs in Sports; The Mode of Action for Anti-Inflammatory Drugs**

Students should be able to:

1. Be familiar with the physical and chemical properties and biological function of each of the families of lipids.
2. Write the structures of simple examples of each of the classes of lipids.  Name the common lipids.
3. Know the method of synthesizing glycerides and the reactions of glycerides: esterification, hydrolysis, saponification, and hydrogenation.
4. Understand the functions of prostaglandins in physiological processes.  Know how aspirin reduces pain.  Be familiar with the steroid hormones.  Understand the role of the lipoproteins in triglyceride and cholesterol transport in the body.
5. Appreciate the roles of HDL, LDL, and cholesterol in heart disease.
6. Know the structure and functions of cell membranes.