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.