

**Outline for Sections on:  
Amines  
Carboxylic Acid Derivatives**

**I. Amines**

- A. Introduction
- B. Chirality
- C. Bronsted Basicity
- D. Synthesis and Reactions
  - 1. Alkylation of Amines
  - 2. Reductive Amination
  - 3. Mono-Alkylation by Acylation/Reduction
  - 4. Reduction of Nitriles
  - 5. Hofmann Rearrangement
  - 6. Eliminations to Form Olefins: Hofmann, Cope
  - 7. Formation of Diazonium Salts

**II. Carboxylic Acids and Derivatives**

- A. Introduction
- B. Acyl Transfer Reactions
  - 1. Background
  - 2. Acid Chlorides and Anhydrides
  - 3. Esters
  - 4. Carboxylic Acids
  - 5. Amides
  - 6. Evidence for a Tetrahedral Intermediate
  - 7. Reactions with  $\text{LiAlH}_4$ ,  $\text{NaBH}_4$ ,  $\text{RLi}$ ,  $\text{RMgBr}$
  - 8. Chemistry of Nitriles