**Freshman Seminar**

**IEOR 24: Introduction to Industrial Engineering and Operations Research**

Prof. Ken Goldberg

**Notes on Week 9: Location Theory 10/21/09 by: Matan Mansoor**

**Supply Chain Logistics**

1. Location Theory
   1. “Location, Location, Location”
      1. E.g. where to locate a restaurant
   2. Location affects business
   3. How to decide where to locate?
      1. E.g. fire station, hospital, BART, bus stops
2. Three Objectives
   1. Minimize total travel distance of customers
      1. Add up distances to facility
   2. Minimize maximum distance traveled
      1. From any point in the vicinity
   3. Maximize service coverage
      1. Coverage anywhere and everywhere
      2. May be too costly (need to keep costs in mind)
3. Application of Objectives
   1. Some objectives will work better for different types of businesses/facilities
      1. Fire station needs to get somewhere quickly
         1. Minimize maximum distance traveled
         2. Needs to reach everyone reasonably
      2. Verizon wants to reach more customers
         1. Maximize service coverage
         2. Increase customer satisfaction
      3. Hospitals
         1. Minimize total travel distance
         2. Locate near a denser area
         3. More convenient for almost everyone
4. Mathematical Application
   1. Minimizing and maximizing involves summation
      1. Use summation formulas to satisfy objectives
   2. If uniform distribution of customers occurs, infinitely many solutions
   3. Maximizing efficiency at the airport
      1. Route planning
      2. Selecting airline hubs