

**ISyE 4803**  
**Advanced Supply Chain Logistics**  
**Fall 2007**

**Reading Assignment 7**

**Due Date: November 20, 2007**

Read the materials below in preparation for discussion in class. The questions are intended to guide your reading and thoughts, but are not the only aspects that will be discussed in class.

1. Air Transport Association, *Airline Handbook*, Chapter 2.
2. Smith, B.C., Leimkuhler, J.F., and Darrow, R.M., “Yield Management at American Airlines”, *Interfaces*, vol. 22, nr. 1, pp. 8–31, 1992.

Questions:

1. Which US agency controls safety aspects of air transportation?
2. Which US agency controlled economic aspects of air transportation prior to deregulation in 1978?
3. Which factors contributed to deregulation of the air transportation industry in the 1970s?
4. What part of the air transportation industry was deregulated first?
5. Which two important aspects of airline service were deregulated in 1978?
6. What were some of the effects of air transportation deregulation?
7. Why do airlines overbook?
8. Which forecasts are needed for the overbooking model?
9. Which techniques were used for this forecasting?
10. Suppose there are two fare classes (two prices),  $f_1 > f_2$ . Suppose that a request is received to buy one ticket in the lower fare class  $f_2$ . Let  $p$  denote the probability that all the remaining tickets can be sold at price  $f_1$ . Explain how the accept/reject decision is made. (You should write down a mathematical expression for the decision rule.)
11. Which forecasts are needed for the discount allocation model?
12. Which techniques were used for this forecasting?
13. What are some shortcomings of exponential smoothing and time-series methods?
14. Which factors are taken into account in American’s passenger choice model?

15. What is the reason for “nesting” the allocation of seats to fare classes?
16. In the 1980’s and 1990’s, American used a method called virtual nesting to control the fare classes in which seats are sold. Explain how virtual nesting works.
17. Which method did American use to decide how many seats to allocate to each fare class?
18. Which type of approach was under development at American at the time Smith et al.’s article was written?
19. What type of model was used to estimate passenger choice behavior?
20. What explanatory variables were used to estimate passenger choice behavior?
21. Which four tools are used to monitor the performance of the revenue management system?
22. How much additional revenue per year is generated by American through the use of revenue management?