

UB - Department of Industrial and Systems Engineering  
IE 459/514 Revenue Management  
Spring 2011

## 1 COURSE CONTACT

- Class Meetings: Mon Wed, 10:30 AM - 11:50 AM (337 Bell Hall)
- Course Website: <http://ublearns.buffalo.edu>
- Instructor: Dr. Changhyun Kwon
  - E-mail: [chkwon@buffalo.edu](mailto:chkwon@buffalo.edu)
  - Office: 400 Bell Hall
  - Office hours: Tue 10:30 AM - 11:50 AM
- Teaching Assistant: Mr. Paul Berglund
  - E-mail: [berglund@buffalo.edu](mailto:berglund@buffalo.edu)
  - Office: 333 Bell Hall
  - Office hours: Mon 12:00 PM - 01:00 PM, Thu 10:00 AM - 11:00 AM

When you email the instructor or TA, you need to include your name and the course number (IE 459/514). Please state “IE 514” or “IE 459” in the subject of your email message. Also, it is very helpful to set up your email client correctly so that your name actually appears as the sender in your email message.

## 2 COURSE DESCRIPTION

Revenue Management (RM), or Yield Management, is a set of operational tools for generating more revenue with resource allocations and/or dynamic pricing. In this course, we will cover the fundamental concepts of RM, with mathematical models and algorithms, including capacity control, network capacity control, over-booking, dynamic pricing, customer choice modeling, pricing under competition, estimation and forecasting. By the end of this course, students will be able to understand the basic principles of RM, build mathematical models and suggest proper computational solution methods.

## 3 PREREQUISITES

- Linear Programming
- Probability and Statistics
- Computer Programming

## 4 REQUIRED TEXTBOOK

- Kalyan T. Talluri and Garrett J. van Ryzin, *The Theory and Practice of Revenue Management*, Springer, 2005.

## 5 ADDITIONAL REFERENCES

(References with bold face are highly recommended.)

- Revenue Management
  - **Robert L. Phillips, *Pricing and Revenue Optimization*, Stanford Business Books, 2005**

- Oz Shy, *How to Price: A Guide to Pricing Techniques and Yield Management*, Cambridge University Press, 2008
- Ian Yeoman and Una McMahon-Beattie, *Revenue Management and Pricing: Case Studies and Applications*, Thomson, 2004
- Anthony Ingold, Una McMahon-Beattie and Ian Yeoman, *Yield Management: Strategies for the Service Industries*, Second Edition, Thompson, 2001
- Microeconomics
  - Michael D. Intriligator, *Mathematical Optimization and Economic Theory*, SIAM, 2002
  - Hal R. Varian, *Microeconomic Analysis*, Norton, 1992
- General (Non-Academic) Readings
  - **Robert G. Cross, *Revenue Management*, Broadway, 1997**
  - Thomas Nagle and John Hogan, *The Strategy and Tactics of Pricing: A Guide to Growing more Profitability*, 4th Edition, Prentice Hall, 2005
  - E. Andrew Boyd, *The Future of Pricing: How Airline Ticket Pricing Has Inspired a Revolution*, Palgrave Macmillan, 2007
  - Tim Harford, *The Undercover Economist*, Random House, 2007
  - Rafi Mohammed, *The Art of Pricing: How to Find the Hidden Profits to Grow Your Business*, Crown Business, 2005
  - Richard B. McKenzie, *Why Popcorn Costs So Much at the Movies: And Other Pricing Puzzles*, Springer, 2008
  - *Harvard Business Review on Pricing*, Harvard Business School Press, 2008
- Articles in Journals

See *Operations Research*, *Management Science*, *Transportation Science*, *Manufacturing and Service Operations Management*, *Journal of Revenue and Pricing Management*, *European Journal of Operational Research*, *Interfaces* and *OR/MS Today*

- Weatherford, L. and S. Bodily, “A Taxonomy and Research Overview of Perishable-Asset Revenue Management: Overbooking, Yield Management and Pricing”, *Operations Research*, 40(5), pp. 831–844, 1992. [\[LINK\]](#)
- McGill, J. and G. van Ryzin, “Revenue Management: Research Overview and Prospects”, *Transportation Science*, 33, 1999. [\[LINK\]](#)
- Bitran, G and R. Caldentey, “An Overview of Pricing Models for Revenue Management”, *Manufacturing and Service Operations Management*, 5, 2003. [\[LINK\]](#)
- Elmaghraby, W. and P. Keskinocak, “Dynamic Pricing in the Presence of Inventory Considerations: Research Overview, Current Practices, and Future Directions”, *Management Science*, 49, 2003. [\[LINK\]](#)
- Boyd, A. and I. Bilegan, “Revenue Management and E-commerce”, *Management Science*, 49, 2003. [\[LINK\]](#)

## 6 TOPICS COVERED

- Review of Probability and Linear Programming
- Introduction to Nonlinear Programming
- Introduction to Microeconomic Theory
- Quantity-based Revenue Management
- Price-based Revenue Management

- Competition Models
- Estimation and Forecasting

## 7 PAPER PRESENTATION

Students need to make a 20-min presentation of a case study by a group of two. Potential topics may be found in the main textbook and other references. The deadline for the case study proposal is February 2, 2010. More information will be given in class. Case studies are often found in *Interfaces* and *ORMS Today*.

## 8 GRADING

- 20% Homework Assignments
- 30% Mid-term Exam
- 20% Presentation and Discussion
- 30% Final Exam