MgmtMBA 290: Revenue Management
Fall 2012

Class Meets:
Wednesday evenings, 7PM-10PM
MPAA 130; for campus map see: http://www.uci.edu/campusmaps.php

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Course Website:
https://eee.uci.edu/12f/38961

Course Message Board:
Please post clarification questions about cases here, as well as conceptual questions about materials discussed in class: https://eee.uci.edu/boards/f12/mba-rm/

Course Description:
Revenue Management focuses on how a firm should set and update pricing and product availability decisions across its selling channels to maximize profitability. It is the science of selling the right product to the right customer at the right time for the right price, and can be viewed as the demand-side complement to traditional supply-side inventory management.

Using mathematical models and advanced analytics, we will study how airlines decide how many seats to reserve for high-paying business customers versus low-paying leisure customers, how hotels determine when to discount their rooms, and how rental car companies determine how many reservations to overbook. As well, we will study how auctions are used to price and sell online advertising, how advertising schedules are determined for several media vehicles, and how revenue management is being used by the health care, retail, and entertainment industries.

We will solve the optimization problems which yield solutions to revenue management problems using Excel and Excel Solver, and discuss various modeling pitfalls and practical data issues. In addition, we will learn high-level concepts that general managers and management consultants can use to apply revenue management techniques across a broad spectrum of industries.

Note: Although there are no formal prerequisites for this course, some exposure to Excel and Excel Solver is preferable. For example, this class could be taken concurrently or after MGMT 201B (Management Science) or MGMT F290 (Analytical Decision Models for Management).

Required Materials:

- "Pricing and Revenue Optimization" by Robert Phillips, 2005. (ISBN: 978-0804746984)
- Course Pack (for cases and articles); see: https://students.universityreaders.com/store/
- Lecture Notes (PowerPoint slides), posted on EEE before each class
- Computer and Software: Microsoft Excel will be used throughout the course (any version 2000/2003/2007/2010 will do). Please make sure you have access to a computer which has Microsoft Excel.

Extra Reading (Optional):

- "Revenue Management" by Robert G. Cross, 1997. (ISBN: 978-0767900331)
- "The Future of Pricing: How Airline Ticket Pricing Has Inspired a Revolution" by E. Andrew Boyd, 2007. (ISBN: 0230600190)

Grading Scheme:

5% - Class Participation
15% - Case Presentation or Critique
20% - Homework (breakdown: 2 graded assignments, 10% each)
35% - Midterms (breakdown: 2 short midterms, 17.5% each)
25% - Final Project (breakdown: 5% proposal, 10% presentation, 10% write-up)

Class Participation (5%)

All students are expected to have read any case studies that will be discussed in class, so that they may participate in discussions.

Case Presentation & Critique (15%)

The class will be divided into a number of groups for this activity. For each class that a case study is to be presented, one group will present and another will critique. The "presenting" group will be graded on their ability to clearly convey the main principles underlying the case study, and the insights they have figured out. The "critiquing" group will be graded on their ability to engage the presenting group and the rest of the class in a discussion about the topics at hand. Both the "presenting group" and the "critiquing group" must read and prepare the case, but their responsibilities differ. While the presenting group should prepare PowerPoint slides to discuss the main points and their suggested course of action, the critiquing group's contributions can be more informal and may consist of a list of alternative courses of action and their pros and cons, listed on the whiteboard and discussed in-class. The class will be divided into 12 groups of 3-4 students for this activity. Each group will either present one case, or critique one case. There are 6 cases in total.

Homework (20%)

Two homework assignments will expose students to solving revenue optimization models in Excel Solver and using the newsvendor model to determine optimal booking limits and optimal overbooking levels. The homework assignments are technical in nature, and should be done as a group (suggestion: use your case study groups).

Midterms (35%)

Two short midterms will be held in-class on weeks 5 and 9. The midterms will test your general understanding of concepts covered in-class, as well as the technical skills covered on the most recent homework. You may use any handwritten or printed notes, as well as the textbook as a reference (the midterms are open-book), but the only electronics allowed are regular scientific calculators to help with arithmetic (you will need it, so please make sure you have one!). Phones, laptops, and graphing calculators will not be allowed.

Final Project (25%)

The class will be divided into a number of groups for this activity (suggestion: use your case study groups). Each group should have 3-4 students. The task is to produce a business plan that outlines how revenue management and price optimization could be implemented at a company or in an industry of your choice. Creative, out-of-the-box thinking is encouraged. Include a discussion of implementation issues, how risks and opportunities may be managed, challenges that may be encountered in transitioning to an information system that supports revenue management, dealing with customer perceptions, etc. There are three deliverables for the final project: 1) a one-page proposal that describes in 2-3 paragraphs what your topic will be; 2) a short PowerPoint presentation in the final week of classes; 3) a written report (6-8 pages double-spaced), along with a description of how each student in the group individually contributed to the finished product.

Acknowledgements:

This course is a fusion of similar courses offered at INSEAD, Carnegie Mellon, and the University of Maryland. Special thanks to Itir Karaesmen, Ioana Popescu, and Nicola Secomandi for the foundations they and others have laid in the teaching of revenue management.

Course Outline:

Week #1 (Oct 3) • Introduction to Revenue Management	Activities: • Review of Excel Solver • Suggested Reading: Phillips Chapters 1, 2
Week #2 (Oct 10) • Modeling customer behavior using price response functions, and their connection to willingness-to-pay distributions • Fitting price response functions to data • Maximization of revenue and profit of a single product selling at a single price, given a known price response function • How market segmentation (and versioning in particular) boosts revenues • Price elasticity and pricing rules-of-thumb • Application: the optimal pricing of concert tickets	Activities: • Review of Linear Regression in Excel • Reading (R1): "Versioning: The Smart Way to Sell Information" • Suggested Reading: Phillips Chapter 3
Week #3 (Oct 17) • The logit price response model • Fitting the logit price response model to disaggregated transaction data using Maximum Likelihood Estimation • Price differentiation and market segmentation • Discussion of fairness issues in RM implementations • Application: revenue management for cruise lines	Activities: • Case Study (S1): "What Price Vertigo?" • Suggested Reading: Phillips Chapter 4

Week #4 (Oct 24) • Guest Speaker: Scott Chandler, Managing Director of Revenue Management and Continuous Improvement, American Airlines • Working around modeling pitfalls: imperfect segmentation, arbitrage, and cannibalization • Pricing when supply is constrained • Peak-load pricing and diversion strategies • Application: time-of-day pricing in electricity markets	Activities: • Case Study (S2): "Copa Cruise" • Homework #1 Due • Suggested Reading: Phillips Chapter 5
Week #5 (Oct 31) • Introduction to quantity-control revenue management • Accounting for opportunity costs: the newsvendor model and Littlewood's Rule • Applications: airline and hospitality industry examples	Activities: • Case Study (S3): "Congestion Charging in London: Road Pricing to Reduce Emissions" • Midterm #1 Today • Suggested Reading: Phillips Chapters 6, 7
Week #6 (Nov 7) • Accounting for opportunity costs: optimal overbooking • Quantity-control RM in practice: the Expected Marginal Seat Revenue (EMSR) model and dynamic booking control • Applications: hotel and rental car reservations • Examples solved in-class	Activities: • Reading (R2): "Easy Profit: A Revenue Management Pilot" • Final Project Proposals Due • Suggested Reading: Phillips Chapter 9

Week #7 (Nov 14) • Forecasting and data issues: uncensoring demand • Customized pricing / B2B Pricing • Applications: hotel group reservation pricing, manufacturing, RM integrated with inventory systems	Activities: • Case Study (S4): "The Right Price Consultants" • Reading (R3): "Starting with Good Inputs: Unconstraining Demand Data in Revenue Management" • Suggested Reading: Phillips Chapter 11
Week #8 (Nov 21) • Auctions • Markdown Pricing • Applications: trucking contracts, online advertising, retail merchandising	Activities: • Case Study (S5): "Break.com" • Homework #2 Due • Suggested Reading: Phillips Chapter 10
Week #9 (Nov 28) • Implementation concerns • Measuring the performance of RM systems • Tips for managing RM projects • Tips for launching your RM career • Applications: healthcare contracts	Activities: • Case Study (S6): "Markdown Pricing Optimization at Bloomingdale's" • Reading (R4): "Texas Children's Hospital" • Midterm #2 Today
Week #10 (Dec 5) • Student Presentations	Activities: • Final Project: Student Presentations Day 1
Week #11 (Dec 12) • Student Presentations	Activities: • Final Project: Student Presentations Day 2

List of Cases and Reading Materials:

Cases S1-S6 will be assigned to students as part of the Case Presentation & Critique part of the course.
Notice that we will use the cases in a different order than they are printed in the course pack!

Case #	***Case Short Name***	***Case Full Name***	***Where Is It?***
S1	"Vertigo"	"What Price Vertigo?"	Course pack p. 1
S2	"Copa Cruises"	"Copa Cruises - Welcome Aboard"	Course pack p. 7
S3	"Road Pricing"	"Congestion Charging in London: Road Pricing to Reduce Emissions"	Course pack p. 23
S4	"Right-Price"	"The Right-Price Consultants"	Course pack p. 71
S5	“Break.com”	"Break.com"	Course pack p. 39
S6	"Bloomingdale's"	"Markdown Pricing Optimization at Bloomingdale's"	Course pack p. 53

Readings R1-R4 will be presented by the instructor; students should read these before they are presented.

Reading #	***Reading Name***	***Where Is It?***
R1	"Versioning: The Smart Way to Sell Information"	Course pack p. 11
R2	"Easy Profit: A Revenue Management Pilot"	Course pack p. 29
R3	"Starting with Good Inputs: Unconstraining Demand Data"	Course pack p. 37
R4	"Texas Children’s Hospital”	Course pack p. 63