KELLG_MA 326: Customer Analytics

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Course Objective

Customer Analytics addresses how to use information technology to learn about and market to individual customers.

Marketing is evolving from an art to a science. Many firms have extensive information about consumers' choices and how they react to marketing campaigns, but few firms have the expertise to intelligently act on such information. In this course, students will learn the scientific approach to marketing with hands-on use of technologies such as databases, analytics and computing systems to collect, analyze, and act on customer information. While students will employ quantitative methods in the course, the goal is not to produce experts in statistics; rather, students will gain the competency to interact with and manage a marketing analytics team.

The course uses a combination of lectures, cases, and exercises to learn the material. This course takes a very hands-on approach with real-world databases and equips students with tools that can be used immediately on the job.

Bio

Song Yao is an Assistant Professor of Marketing and McManus Faculty Research Chair at the Kellogg School of Management, Northwestern University. Professor Yao's research interests include quantitative marketing, online marketing, advertising, auctions, competitive strategy, and customer management. With a methodological and theoretical orientation of empirical microeconomics, his substantive research focuses on network effects, especially in the context of new media such as online auctions and keyword search. His publications appear in leading academic journals, including Marketing Science and the Journal of Marketing Research. Prior to joining Kellogg, he taught Marketing Management at Duke University. He received his Ph.D. in Business Administration from Duke University, M.A. in Economics from the University of California, Los Angeles, and B.A. in Economics from the Renmin University of China.

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Course Structure

Customer Centric Marketing

- Introduction to Customer Analytics and Course Overview (Class 1)
- Quantifying Customer Value (Class 2)
- Case Analysis: “Home Alarm, Inc.: Assessing Customer Lifetime Value” (Class 4)

Getting Ready for Analytics

- Statistics Review (Class 3)
- Basic Customer Analysis (Class 5)
- Case Analysis: “Pilgrim Bank (A)” (Class 7)

Prospecting and Targeting the Right Customers

- Predicting Response with RFM analysis (Class 6)
- Case Analysis: “Tuscan Lifestyles: Targeting Customers with RFM Analysis”; Lift and Gains (Class 8)
- Predicting Response with Logistic Regression (Class 9)
- Case Analysis: “BookBinders: Predicting Response with Logistic Regression” (Class 11)
- Predicting Response with Neural Networks (Class 10)

Developing Customers

- Next-Product-To-Buy Models: Learning From Purchases (Class 12)
- Case Analysis: “Intuit: Quickbooks Upgrade” (Class 13)
- Recommendation Systems: Learning From Ratings (Class 14)

Retaining Customers

- Predicting Attrition (Class 15)
- Case Analysis: “Cell2Cell: the Churn Game” (Class 17)

Selecting the Right Offers

- Design of Experiments / Multi Variable Testing (Class 16)
- Case Analysis: “Capital One: Information-Based Credit Card Design” (Class 19)

Limitations of Customer Analytics

- When Customer Analytics, CRM, and Databases Fail (Class 18)

Wrap-up

- Wrap-Up (Class 20)

Course Schedule and Assignment Due Dates

Date	Weekday	Class #	Class Title	Assignments Due
April 2	Tuesday	**1**	Introduction to ITBM and Course Overview	
April 4	Thursday	**2**	Quantifying Customer Value	
April 9	Tuesday	**3**	Statistics Review	
April 11	Thursday	**4**	Case Analysis: "Home Alarm, Inc.: Assessing Customer Lifetime Value"	**Home Alarm LCV**
April 16	Tuesday	**5**	Basic Customer Analysis	**Decathlon Part 1**
April 18	Thursday	**6**	Predicting Response with RFM analysis	
April 23	Tuesday	**7**	Case Analysis: "Pilgrim Bank (A)"	
April 25	Thursday	**8**	Case Analysis: "Tuscan Lifestyles: Targeting Customers with RFM Analysis"; Lift and Gains	**Tuscan RFM**
April 30	Tuesday	**9**	Predicting Response with Logistic Regression	
May 2	Thursday	**10**	Predicting Response with Neural Networks	
May 7	Tuesday	**11**	Case Analysis: "BookBinders: Predicting Response with Logistic Regression"	**BB Logistic**
May 9	Thursday	**12**	Next-Product-To-Buy Models: Learning From Purchases	
May 14	Tuesday	**13**	Case Analysis: "Intuit: Quickbooks Upgrade"	**Intuit Quickbooks**
May 16	Thursday	**14**	Recommendation Systems: Learning From Ratings	
May 21	Tuesday	**15**	Predicting Attrition	**Decathlon Part 2**
May 23	Thursday	**16**	Design of Experiments / Multi Variable Testing	
May 28	Tuesday	**17**	Case Analysis: "Cell2Cell: the Churn Game"	**Cell2Cell Churn**
May 30	Thursday	**18**	When Customer Analytics, CRM, and Databases Fail	
June 4	Tuesday	**19**	Case Analysis: "Capital One: Information-Based Credit Card Design"	**Capital One Testing**
June 6	Thursday	**20**	Wrap-Up	

Detailed Class Descriptions

Class 1: Introduction to Customer Analytics and Course Overview

Objectives:

- To provide an overview of the course topics and requirements.
- To introduce the possibilities that the information revolution has provided for marketing to individual consumers.
- To understand in a real-life example how a company used customer information to become customer-centric

Readings:

- Loveman, Gary: "Diamonds in the Data Mine" HBR OnPoint 3647, 2003 (on Blackboard)
- "Active in Cloud, Amazon Reshapes Computing," New York Times, 2012 (on Blackboard)
- "The Age of Big Data," New York Times, 2012 (on Blackboard)

Plan ahead:

- For class 5 you need to have access to Stata. There are two options: you can either obtain a personal license or you can use one of the seven computers at 555 Clark. See below for how to access Stata. **In particular, if you decide to obtain a personal license, please bring your laptop to class 5 with Stata installed.**

Class 2: Quantifying Customer Value

Objectives:

- To introduce the notion of the customer lifecycle
- To understand the concept of customer profitability
- To understand the basics of lifetime value calculations
- To explore how lifetime value can be used to guide marketing decisions

Readings (in case packet):

- HBS Case 9503019: "Customer Profitability and Lifetime Value" (in case packet)
- "The Customer Life Cycle" (in case packet)
- Starbucks LTV infographic http://blog.kissmetrics.com/wp-content/uploads/2011/08/calculating-ltv.pdf

Class 3: Statistics Review

Objectives:

- To refresh your knowledge of basic statistics (and show how it is useful for addressing marketing questions)
- To learn how to determine the association between variables
- To learn how to read and interpret regression output

Readings (on Blackboard):

- "Tips For Using Statistics In Customer Analytics" (on Blackboard)
- Review notes from a previous statistics class on hypothesis testing and regression
- "Big Data's Big Problem: Little Talent," Wall Street Journal, 2012 (on Blackboard)

Class 4: Case Analysis: "Home Alarm, Inc.: Assessing Customer Lifetime Value"

Objectives:

- To apply lifetime value calculations

Readings:

- "Home Alarm, Inc.: Assessing Customer Lifetime Value" (in case packet)

Preparation (Individual Assignment Due; Accounts for 12% of Class Grade):

- Prepare "Home Alarm, Inc.: Assessing Customer Lifetime Value" for class discussion and as individual assignment.
- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.

Preparation Questions:

1. Consider **existing** residential customers who are **about to start their second year** with Home Alarm:
   a. What is the LTV (looking 8 years out) of a customer who will use auto-pay?
   b. What is the LTV (looking 8 years out) of a customer who will not use auto-pay?
   c. What is the maximum amount that Home Alarm could spend on incentives to convert such an existing customer to auto-pay?
   d. Suggest at least two marketing actions that Home Alarm should consider to convert existing customers who are just about to start their second year with Home Alarm to auto-pay. Be specific about incentive amounts (if any).
2. Consider **new** residential customers:
   a. What is the LTV (looking 8 years out) of a customer who will use auto-pay?
   b. What is the LTV (looking 8 years out) of a customer who will not use auto-pay?
   c. What is the maximum amount that Home Alarm could spend on incentives to make new customers sign up with auto-pay? To make this calculation, note that currently (i.e. without **any** incentives) 30% of new customers sign up with auto-pay. If we **do** offer incentives, we of course expect all these 30% to still sign up for Autopay. We also expect that the incentive will make ½ of the remaining 70% of customers sign-up for Autopay as well.
   d. Suggest at least two marketing actions (not yet listed in 1d) that Home Alarm should consider to sign up new customers with auto-pay. Be specific about incentive amounts (if any) and think about targeting both consumers and sales people.

Write-up Instructions:

- Page 1: Spreadsheet showing LTV calculations (questions 1a and 1b)
- Page 2: Questions 1c-1d (with at least 1.5 line spacing).
- Page 3: Spreadsheet showing LTV calculations (question 2a and 2b)
- Page 4: Questions 2c-2d (with at least 1.5 line spacing).
- I strongly encourage you to label your calculations, footnote any assumptions, etc. It is in your best interest that I not have to struggle to unravel where your numbers came from

Hints:

1. "Today" in the LTV calculation always captures the moment in time in which you define your customer base for the purposes of the LTV calculation. This means that the probability that a consumer is active "Today" is always 100%.
2. The relevant attrition rate for year 1 of your LTV calculation need not be customers' attrition rate during their first year of service with your firm. The relevant attrition rate depends on how long consumers have been with your company at the point at which your LTV calculation starts.
3. When calculating the LTV in question 2, you should apply the discount rate to revenues and cost incurred already in the first year of service **but not** the sign-up revenues and costs.
4. All the necessary calculations can be done in Excel. Stata is not yet required.

Class 5: Basic Customer Analysis

Objectives:

- To master basic analysis with the statistics program "Stata"

Readings:

- "The BookBinders Book Club: Basic Customer Analysis" (in case packet)
- "Stata Tutorial" (on Blackboard)
- "Stata Cheat Sheet" (on Blackboard)
- Please bring paper copies of these readings to class, you will need them!

Preparation (Individual Assignment Due; Accounts for 8% of Class Grade):

- Prepare "Decathlon Part 1: E-Mail Frequency" for class discussion and as individual assignment Dataset: "DecathlonFrequency.xls". The dataset is in on Blackboard.
- Details of the assignment can be found in "Decathlon Part 1: E-Mail Frequency Assignment"
- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.
- Read "The BookBinders Book Club: Basic Customer Analysis"
- We will devote most of this class to hands-on exercise with Stata, answering the questions posed at the end of the BookBinders case. We will use the **d**atasets "BBB.dta" and "PCsUnlimited.dta" which are on Blackboard.
- **Bring laptop to class with Stata installed and the two datasets loaded onto the laptop**

Class 6: Predicting Response with RFM analysis

Objectives:

- To understand the premise behind RFM analysis
- To introduce how to implement an RFM campaign

Readings:

- "How Companies Learn Your Secrets," New York Times, 2012 (on Blackboard)
- "Recency, Frequency and Monetary (RFM) Analysis" (in case packet)
- Quick Profits with RFM Analysis
  http://www.dbmarketing.com/articles/Art149.htm
- **Optional but encouraged:** I have created a Stata program (i.e. a ".do file") that will allow you to replicate the RFM analysis in the reading with Stata step-by-step. This will get you some practice before having to do the Tuscan RFM assignment. The document is "RFM_BBB_stata.do" which is on Blackboard. (Since this is a text file your browser might display this instead of downloading it when you click on it. If so, right-click in the file and choose to download it as a file.)
  Hint:
  - Please see the "Working with Do-Files" section in the **Stata Tutorial** for instructions on how to execute an existing do-file in Stata.
  - You will need the Stata data file "BBB.dta" from the class "Basic Customer Analysis" before you run the do file.

Class 7: Case Analysis: "Pilgrim Bank (A)"

Objectives:

- To introduce customer profitability and its determinants
- To consider different types of analytic methods
- To practice your Stata skills with data on profitability and other variables for a set of bank customers.

Readings:

- HBS Case 9602104: "Pilgrim Bank (A)" (in case packet)

- "Pilgrim Bank (A): Using STATA to Answer the Case Questions" (on Blackboard)

Preparation:

- Prepare "Pilgrim Bank (A): Customer Profitability" for class discussion.
- Dataset: "PilgrimA.dta". The dataset is on Blackboard.
- Detailed instructions about how to answer the preparation questions with STATA are contained in "Pilgrim Bank (A): Using STATA to Answer the Case Questions"

Preparation Questions:

1. How much do profits vary across customers?
2. How does Pilgrim Bank make money from their customers and how can this explain the variation in customer profitability?
3. Are online customers more profitable than offline customers?
4. What is the role of customer demographics in comparing online and offline profitability?
5. What is your recommendation to the senior management team in terms of Pilgrim Bank's online channel pricing strategy? Should the bank charge fees, offer rebates, or do nothing in regards to pricing for online channel use?

Plan ahead:

- Obtain a license of the neural network software ModelMax from ASA Corp. This software is important for the upcoming "Intuit: Quickbooks Upgrade" assignment.
- Details on how to download the software and obtain a license can be found in "Instructions for Obtaining a Student Copy of ModelMAX Software" (see the materials for the "Intuit: Quickbooks Upgrade" class)

Class 8: Case Analysis: "Tuscan Lifestyles: Targeting Customers with RFM Analysis"
Lift and Gains

Objectives:

- To apply RFM analysis
- To demonstrate the application of RFM for targeting direct mail offers
- To explore variations of RFM
- Evaluating RFM (and other) models

Readings:

- "Tuscan Lifestyles: Targeting Customers with RFM Analysis" (in case packet)
- "Assessing a Model's Performance: Lifts, Gains and Profits" (in case packet)

Optional Reading and Sites:

- RFM Migration Analysis: A New Approach to a Proven Technique
  http://www.dbmarketing.com/articles/Art123.htm

Preparation (Individual Assignment Due; Accounts for 10% of Class Grade):

- Prepare "Tuscan Lifestyles: Targeting Customers with RFM Analysis" for class discussion and as individual assignment
  Dataset: "Tuscan_RFM.dta". The dataset is on Blackboard.
- Everything you need to know to do this assignment is contained in the RFM lecture notes, and the file "RFM_BBB_stata.do" (on Blackboard) which goes through the calculations for the Bookbinders RFM analysis we did in lecture 6 and in the reading "Recency, Frequency and Monetary (RFM) Analysis." Note that you cannot use this ".do" file directly to solve this case – however, a simple adaptation of the commands to work with the Tuscan case will work. You might also want to keep the "Stata Tutorial" from Class 5 at hand.
- **Hint:** There are two options to paste and align Stata tables in Word to make it look good.
  1. Cut and paste and assign a "fixed-pitch" font to the table. For example, pick "Courier".
  2. Select the table in Stata and then in the "Edit" menu in Stata copy using "Copy Table". This inserts tabs instead of spaces between the columns and allows you to copy into Excel or a Word table.

- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.

Preparation Questions:

- Case questions are in the case.

Write-up Instructions:

- For case questions 1, 2, and 4-7 you should 'cut and paste' Stata output into a Word document.
- Address question 8 in your write-up.
- Questions 9 and 10 require a few basic calculations (a calculator will do).
- Detailed step-by-step directions for Q11 are included in the file "RFM_BBB_stata.do" which is on Blackboard.
  Question 12 requires you to sit back and think about RFM - and then summarize your thoughts.

Class 9: Predicting Response with Logistic Regression

Objectives:

- To introduce a key model for predicting choices: logistic regression
- To understand how to interpret logistic regression results

Readings:

- "Applied Logistic Regression" (in case packet)

Class 10: Data Mining--Neural Networks

Objectives:

- To introduce neural networks and their application

Readings:

- Ainslie, A. and X. Drèze "Data Mining: Using Neural Networks as a Benchmark for Model Building" (in case packet)
- "Shopper Alert: Price May Drop for You Alone," New York Times, 2012 (on Blackboard)

Plan ahead:

- At this point we have covered everything you need to know to work on the upcoming "Intuit: Quickbooks Upgrade" assignment. Since the assignment is less structured than the preceding assignments I suggest you start working on it now so that you leave yourselves enough time think about how to proceed.
- You should by now have obtained a license of the neural network software ModelMax from ASA Corp. This software is important for the upcoming "Intuit: Quickbooks Upgrade" assignment.
- Details on how to download the software and obtain a license can be found in "Instructions for Obtaining a Student Copy of ModelMAX Software" (see the materials for the "Intuit: Quickbooks Upgrade" class)

Class 11: Case Analysis: "BookBinders: Predicting Response with Logistic Regression"

Objectives:

- To practice interpreting logistic regression results
- To understand how to score customers using logistic regression
- To assess the incremental power of logistic regression over RFM

Readings:

- "BookBinders: Predicting Response with Logistic Regression" (in case packet)

Preparation (Individual Assignment Due; Accounts for 12% of Class Grade):

- Prepare "BookBinders: Predicting Response with Logistic Regression" for class discussion and as individual assignment
- Dataset: "BBB.dta". The dataset is on Blackboard.
- Everything you need to know to do this assignment is contained in the Logistic lecture notes, and the reading "Applied Logistic Regression." You might also want to keep the "Stata Tutorial" at hand.
- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.

Preparation Questions:

- Case questions are in the case.

Write-up Instructions:

- Write up the answer to each case question.
- Cut and paste from Stata into Word where needed.

Class 12: Next-Product-to-Buy Models: Learning from Purchases

Objectives:

- To understand the benefits of using customer purchase data for customer development
- To understand how to cross-sell and up-sell
- To illustrate the benefits of product tailoring

Readings:

- Knott, Hayes, and Neslin "Next-Product-to-Buy Models for Cross-Selling Applications," Journal of Interactive Marketing, 16(3), 2002 (on Blackboard)

Class 13: Case Analysis: "Intuit: Quickbooks Upgrade"

Objectives:

- To apply an up-selling strategy in a real-world case
- To understand model development
- To demonstrate the power of predictive modeling

Readings:

- Darden Case UVA-M-0496: "Intuit: Quickbooks Upgrade" (in case packet)
- "Quicken Quickbooks Upgrade Assignment" (on Blackboard)

Preparation (Group Assignment Due; Accounts for 14% of Class Grade):

- Prepare "Intuit: Quickbooks Upgrade" for class discussion and as group assignment
  Dataset: "Intuit.dta". The dataset is in on Blackboard.
- Details of the assignment can be found in "Quicken Quickbooks Upgrade Assignment"
- Reminder: Details on how to download the software and obtain a license can be found in "Instructions for Obtaining a Student Copy of ModelMAX Software"
- Please see "Using ModelMax for the Intuit Case" for instruction on how to use ModelMax. A quickstart guide to ModelMax can be found in "Getting Started with ModelMAX." There is also a detailed ModelMax user's guide. All of these can be found on Blackboard.
- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.

Preparation Questions:

- Please see the document with the assignment details.

Write-up Instructions:

- Please see the document with the assignment details.

Class 14: Recommendation Systems: Learning from Ratings

Objectives:

- To understand the benefits of customer ratings data for customer development
- To understand how to use recommendation systems in services

Readings:

- "Netflix analyzes *a lot* of data about your viewing habits," Gigaom, 2012 http://gigaom.com/cloud/netflix-analyzes-a-lot-of-data-about-your-viewing-habits/
- ***Optional**:* Pazzani, Michael and Daniel Billsus: "Content-Based Recommendation Systems" (just to get you a sense of the complexity of the topic – you don't have to make it through the full paper.) http://www.springerlink.com/content/qq35wt68l6774261/fulltext.pdf

Class 15: Predicting Attrition

Objectives:

- To see that customer retention is a major problem for various industries
- To see how analytical methods can be used to help fight churn.

Readings:

- "How Symphonies Grew Strong Audiences By Killing The Myth Of The Average Consumer, Fast Company, 2011 http://www.fastcompany.com/1785985/how-symphonies-grew-strong-audiences-killing-myth-average-consumer
- "Decathlon Part 2: E-Mail Targeting Assignment" (on Blackboard)
- ***Optional**:* Neslin, Gupta, Kamakura, Lu, Mason: "Measuring and Understanding the Predictive Accuracy of Customer Churn Models," (2006) *Journal of Marketing Research*, Vol 43 (2), pp 204-211 (in case packet)

Preparation (Group Assignment Due; Accounts for 10% of Class Grade):

- Prepare "Decathlon Part 2: E-Mail Targeting" as group assignment
  Dataset: "DecathlonTargeting.dta". The dataset is in on Blackboard.
- Details of the assignment can be found in "Decathlon Part 2: E-Mail Targeting Assignment"
- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.

Plan ahead:

- Next week you will have to submit the assignment ""Cell2Cell: the Churn Game". This assignment will benefit from you starting early.

Class 16: Design of Experiments / Multi Variable Testing

Objectives:

- To understand how to set up experiments
- To understand how to test variations in many different variables at once

Readings:

- "Multivariate Testing 101: A Scientific Method Of Optimizing Design," Pras Chopra, 2011 http://www.smashingmagazine.com/2011/04/04/multivariate-testing-101-a-scientific-method-of-optimizing-design/
- Almquist and Wyner, "Boost your marketing ROI with experimental design," HBR, October 2001 (on Blackboard)

Class 17: Case Analysis: "Cell2Cell: the Churn Game"

Objectives:

- To understand how to predict attrition in the real world.
- To learn how to use insights from an attrition model to develop an incentive plan for enticing would-be churners to remain customers.

Readings:

- Duke Case: "Cell2Cell: The Churn Game" (in case packet)
- "Cell2Cell Churn Management Assignment" (on Blackboard)

Preparation (Group Assignment Due; Accounts for 10% of Class Grade):

- Prepare "Cell2Cell: The Churn Game" for class discussion and as group assignment
- Dataset: "cell2cell.dta". The dataset is on Blackboard.
- Details of the assignment can be found in "Cell2Cell Churn Management Assignment"
  Please submit the assignment online (please submit only one file and only in pdf format) using Blackboard.

Preparation Questions:

- Please see the document with the assignment details.

Write-up Instructions:

- Please see the document with the assignment details.

Hints:

- Please see the document with the assignment details.

Plan ahead:

- Next week you will have to submit the assignment ""Capital One Financial Corporation: Product Design." This is a challenging assignment for which you should start early.

Class 18: When Customer Analytics, CRM, and Databases Fail

Objectives:

- To understand the limitations of customer information
- To learn how to avoid common mistakes in implementing customer analytics

Readings:

- "Sure, Big Data Is Great. But So Is Intuition," New York Times, 2012 (on Blackboard)
- Rigby, Reichheld, and Shefter: "Avoid the Four Perils of CRM," HBR Onpoint 8946, 2002 (on Blackboard)

Class 19: Case Analysis: "Capital One: Information-Based Credit Card Design"

Objectives:

- To show an application of experimentation in the real world (Capital One)
- To demonstrate "test-cell" marketing
- To illustrate the benefits of product tailoring

Readings:

- Darden Case UVA-M-0731: "Information-Based Credit Card Design" (in case packet)
- "Information-Based Credit Card Design Assignment" (on Blackboard)

Preparation (Group Assignment Due; Accounts for 14% of Class Grade):

- Prepare "Information-Based Credit Card Design" for class discussion and as group assignment
- Details of the assignment can be found in "Information-Based Credit Card Design Assignment."
- **Please submit the assignment online** (please submit only one file and only in pdf format) using Blackboard.

Preparation Questions:

- Please see the document with the assignment details.

Write-up Instructions:

- Please see the document with the assignment details.

Class 20: Wrap-Up

Objectives:

- To review and synthesize the insight from "Customer Analytics"

Preparation:

- Review lecture and class notes
- "When CMOs Learn to Love Data, They'll Be VIPs in the C-Suite," Ad Age, 2012 http://adage.com/article/cmo-strategy/cmos-learn-love-data-c-suite-vips/232699/

Course materials and Course Management System

Readings in this course consist of a mixture of cases and articles -- no textbook is required. However, there are several optional books if you are interested in more detail.

- Case packet
- Additional course material (distributed on Blackboard)
- Lecture notes (distributed on Blackboard)
- Analytics: "The New Direct Marketing" by David Shepard Associates (optional)
- Strategy: "Strategic Database Marketing" by Arthur Hughes (optional)
- Information Economics: “Information Rules: A Strategic Guide to the Network Economy” by Carl Shapiro and Hal Varian (optional)

The syllabus, additional course material, and lecture notes are on Blackboard. Important announcements will be e-mailed to you. Lecture notes will be posted on Blackboard on the day of the lecture.

Software and documentation

We will use the statistics program “Stata” during the course. The Stata/IC 12 software normally costs $1,495. Since you are students, you can purchase a perpetual personal license for $179. The $179 gives you unlimited access to the software. If you would prefer, you can also purchase a one-year license for $98 or a half-year license for $65. To order, please go to:

http://www.stata.com/order/new/edu/gradplans/gp-direct.html

There are seven computers at 555 Clark Street with Stata installed, 3 in the student lounge and one in each of the 4 study group rooms. Alternatively, you may choose to use one of those computers. If you decide to choose this option, however, be aware that 2 out of the 4 individual-assignments and all 4 group-assignments require Stata. Please schedule accordingly and start the assignments early to avoid the crowd.

While Stata has a very good online help, it is often brief and occasionally too technical since it assumes that you are familiar with the statistics that is underlying the command. The book I recommend for the course, “A Gentle Introduction to Stata” (see below) is intended to bridge the gap between statistical texts and Stata's own documentation. This text is ideal as a self-study course for those new to statistics and Stata.

“A Gentle Introduction to Stata, 3rd Edition” by Alan C. Acock
(Publisher: Stata Press, ISBN 1-59718-043-2)

Those who have a stronger background in Statistics and want a more advanced book on Stata and its programming abilities might also want to get:

“Data Analysis Using Stata” by Ulrich Kohler and Frauke Kreuter
(Publisher: Stata Press, ISBN: 1-59718-007-6)

Grading policy and assignments

The grade in this course will be based on the following criteria with their associated weights. The syllabus details the grading weights associated with each exercise.

Individual case exercises (4)	42% (12%, 8%, 10%, 12%)
Group case exercises (4)	48% (14%, 10%, 10%, 14%)
Class participation	10%

Class participation
Quality contributions which are relevant to the discussion will improve your participation grade. I will call on students at random to open case and assignment discussions. Your participation grade will be significantly hurt if you are called upon to offer your analysis on a case or assignment question and you are not prepared.

Attendance and punctuality
Learning to articulate your analysis and to evaluate and respond to the analysis of others is an important part of what you will learn in this class. If you miss class, you will miss this, and there isn't a way to "make it up." As a result, you should make every effort not to miss class. **If you miss class or are late more than twice, it will lower your class participation grade.** (Kellogg provides exceptions for religious holidays, funeral attendance, and student/dependent hospitalization.) If you must miss class, you should do the readings, prepare and turn in the assignments on time (late assignments will not be accepted), and arrange to get notes from a friend about what you missed in class. Recall that I will post the presentation slides (and anything else that I hand out in class) to the Blackboard website after each lectures. If you miss 4 or more classes I reserve the right to fail you.

Individual and group exercises
Much of the learning during the course will happen with the help of individual and group case exercises. These exercises are described in detail in the syllabus. If an exercise is labeled an "individual exercise" you are not allowed to work with other students -- the write-up should reflect your own work only. If an exercise is labeled a "group exercise" you should work on it in groups and only hand in one write-up per group (about 4-5 students). Groups should be formed (self-selected) at the beginning of the semester and remain constant for all exercises and the group project.

It will be a violation of academic integrity if you base your assignments on solutions you have found on the Internet or which you have obtained from classmates in prior years. I reserve the right to fail you for the course if I become aware of such a violation.

About cases

The case situations that will be discussed have been developed after careful research on actual situations in real companies. The case writer(s) has (have) attempted to describe enough of the background and details of the situation in order to provide an adequate basis for class discussion.

Thorough preparation on the part of all class participants is essential to having a good and fruitful class discussion. Merely reading the case is not be enough. After an initial reading to get a broad overview, go back and study the case thoroughly. Consider the course material covered up to that point in time, the assigned text and other readings on that particular day. Make any notes you find helpful and mark up the case to facilitate structuring your understanding of the situation. Identify the major problems and key relationships. Conceive alternative solutions to the problem and identify the advantages and disadvantages of each. Be prepared to defend your stand and recommendation in the class.

Each case is bound to lack some information that you would like to have in order to make a decision. As in real life, management decisions frequently must be made in the absence of information. A key executive skill is the ability to make effective decisions under uncertainty. A case discussion is preparation for just such situations.

Rarely, if ever, does a case contain an ideal solution to the problem highlighted in it. So do not expect a perfect all-encompassing solution at the end of the case discussion. In most cases, no such answer will emerge because each management problem often has multiple alternative solutions, each involving different degrees of risk, cost and complexity of execution. The major benefit of case discussion is that it provides the participants with a perspective and a repertoire of ideas which non-participants will lack. One case study participant once commented that "regular and active participation in case discussions helps you gain valuable experience even without being on the job." There is some truth in this statement. Another benefit of the case discussion is that concepts which may appear theoretical in a text book come to life when seen from the perspective of a case. This helps in internalizing class concepts and seeing how they can be applied.

Classroom Etiquette

Students are expected to respect Kellogg's Code of Student Etiquette at all times. In addition, please observe the following:

- **No electronics.** You may not use laptops, mobile phones, tablets, or related devices in class unless directed to do so. It is distracting to your classmates to sit beside or behind you while you surf, text, or game.
- **Punctuality.** Class will start on time. It is distracting to your classmates for you to be climbing to your seat and settling in while they are trying to pay attention to the class. If you are absent or late more than twice, it will begin to reduce your class participation grade.
- **Seating chart.** Your assigned seat for the quarter will be the seat you choose for the third class session. I use assigned seats to help me keep track of class discussion, and also to have a place to direct prospective students and visitors to sit.

Additional guidance on will be provided during the quarter, as needed.

Honor code

Students are expected to respect Kellogg and Northwestern's Honor Code at all times.

The first point of the Kellogg Honor Code is "Not to seek an unfair advantage over other students, including but not limited to giving or receiving unauthorized aid during completion of academic requirements." The consequences of cheating can be failing an assignment or the course, or suspension or dismissal from the university.

Written case assignments are expected to be individual efforts or group assignments, as specified in the syllabus. Individuals or groups should not consult the Internet, friends at other business schools, or people who have taken the course already.

The members of any academic community are expected not to present as their own ideas or material from other sources. Northwestern's academic integrity guidelines state: "A conscientious writer always distinguishes clearly between what has been learned from others and what he or she is personally contributing to the reader's understanding." See http://www.northwestern.edu/uacc/plagiar.html for more information.

In the context of this course, it is acceptable to refer to concepts, frameworks, and analytical tools from the readings or class lectures without citation. You may also refer to the material in cases without citations. However, do not quote or paraphrase analysis from another source and present it as your own.