BANA 7012 Decision Modeling
Spring Semester 2018 Flex 2
Distance Learning Syllabus (February 26 – April 21)

READ EVERYTHING VERY CAREFULLY!

Instructor
James R. Evans, Ph.D.
Professor
Department of Operations, Business Analytics, and Information Systems
Room 526, Lindner College of Business

Email: James.Evans@UC.edu (please put BANA 7012 in the subject line)
Cell Phone (for urgent issues only please): 513 375-8770
Office Hours: Virtual office hours via WebEx will be posted on Blackboard.

Please use email as the primary mode of contact. Most often I can address your issue with an email or a phone call. I will respond to email within 24 hours, and generally much sooner, contingent on my schedule. Please use the Q&A Discussion board to ask clarifying questions or troubleshoot Excel issues.

If you feel completely lost, let me know. Understand, however, that graduate level study requires an independent approach to homework; know specific questions that you wish to ask when requesting homework help; don’t simply ask “Am I doing this right?” I don’t “pre-grade” homework!

To preserve the integrity of quiz and exam questions, I do not post answers. However, if you want to understand what you did wrong on homework quizzes, send me your Excel homework file and I will be happy to review it and explain what you did wrong. If you want to review an exam, we can set up a WebEx chat, or if you are on campus, we can schedule an office hour. I don’t have fixed office hours on campus this term but will be in on an as-needed basis.

Course Description
This course is the second in a sequence of two courses in the MBA program that provides an introduction to business analytics. This course continues from statistical inference and hypothesis testing and starts with regression modeling and analysis. It then moves to decision modeling: building spreadsheet models for prediction; risk analysis using Monte-Carlo simulation; and optimization modeling and solution.

The book was designed around Microsoft Excel 2013 for Windows. Excel will be used as the platform for conducting analyses and performing statistical calculations. Since the second edition of the book was published, new versions of Excel have been released (I am incorporating this into the third edition which won’t be published until next year). You should be using Excel 2016 for Windows or Excel 2016 for Mac, which has the
statistical procedures that we will be using. IMPORTANT! You cannot use any earlier versions of Excel for Mac as it does not have the capabilities you will need; if you use Mac you must upgrade. If you use Excel 2016, note that menus are somewhat different from the screen shots in the book; it is your responsibility to ensure that you are using the correct commands and menus that you will need. Students may purchase Microsoft Office products at greatly discounted prices from UCIT.

DO NOT DELAY IN SETTING UP YOUR COMPUTER AND SOFTWARE PROPERLY, OR YOU WILL RISK MISSING ASSIGNMENTS. I WILL NOT ACCEPT ANY EXCUSES RELATED TO TECHNOLOGY THAT YOU DID NOT ADEQUATELY PREPARE FOR.

Course Objectives:
Students who complete this course will be able to:
• Apply simple and multiple linear regression analysis
• Develop and analyze mathematical and spreadsheet-based models for practical business decisions
• Develop and analyze spreadsheet models for risk analysis using Monte Carlo simulation with Excel
• Formulate and solve models for linear and integer optimization, and interpret the results provided by Excel Solver.

Required Textbook:

DO NOT PURCHASE THE INTERNATIONAL/GLOBAL EDITION AS THE PROBLEMS AND DATA SETS ARE DIFFERENT, AND BEWARE OF THIRD PARTY SELLERS WHO OFTEN SELL THE GLOBAL EDITION IN THE U.S. ILLEGALLY.

Software and Files

1. Please download all the data and model Excel files from www.pearsonhighered.com/evans. Click on the Business Analytics 2e book cover or the Online Data Files link. These are the files used in the textbook examples and referred to in the homework problems.
2. Make sure that the Analysis Toolpak and Solver are installed in Excel; for Windows, see page 50 in the text. On Excel 2016 for Mac, go to Tools > Excel Add-ins and select both Analysis Toolpak and Solver.

3. DO NOT attempt to install Analytic Solver Platform as described in the text because there have been numerous changes in the software and licensing procedures. We will not use it in this course. So just ignore any references to it in the text.

Learning Activities
A variety of learning activities are designed to support the course objectives, facilitate different learning styles, and build a community of learners. Learning activities for the modules include the following:

1. Reading the textbook
2. Viewing and listening to PowerPoint lectures
3. Working practice problems (with solutions and video explanations provided).
4. Completing written assignments and taking quizzes based on your homework.

Blackboard
Everything you need to take this course (except for the textbook files and software) is available on Blackboard. Please see the “Overview of Module Content” in the Course Overview section.

1. Use the Discussion Board Q&A to post questions regarding clarification of assignments or lecture and text material. Please read the posts to avoid asking duplicate questions; you can click on the “Subscribe” button to get email announcements when a new entry has been posted to the Discussion Board with a link to click on and take you directly to the new post. This is the best way to keep up.

2. For questions of a personal nature or for help with assignments, contact me directly, as all Discussion Board posts are available to the entire class. Be careful not to send personal email to the entire class through Blackboard. Type my address in your email.

3. Check Blackboard announcements every day! You are responsible for any changes/corrections/etc. that I may post regarding assignments or course material.
Assignments, Quizzes, and Exams

1. Assignments and Quizzes
After each lecture, you will take a short quiz to test your understanding of some of the main concepts. You may take each quiz twice (Blackboard keeps the second score). If you don’t understand something, go back and review the lecture. There is little excuse not to get the maximum number of points from these.

Problems from the text are assigned for each module. All problems are to be done in Excel and save your work in case I need to review it. After working the problems, you will take a short quiz to post your answers. I highly recommend that you try to work the practice problems first; solutions and video explanations are provided for your learning.

All quizzes must be completed by the stated deadlines; you will not be able to start them once the deadline passes. Failure to take the quizzes on time will result in a 0; no exceptions, except for bona fide medical or personal reasons with advance permission.

2. Project
An *individual* project is assigned at the end of Module 3. Projects must be submitted as Word documents (NOT PDFs) that summarize and explain the results in a clear and professional manner. See the instructions for the project on Blackboard. The written report will be submitted through SafeAssign and will be checked against a global reference database for plagiarism.

3. Exams
Exams are scheduled for 72-hour periods (from 12:00 am Friday until 11:59 pm on Sunday) on March 23-25 (Friday through Sunday), April 6-8 (Friday through Sunday), and April 19-21 (THURSDAY through SATURDAY). You MUST take the exams during these time windows. Mark your calendars! Failure to take the exams during these time windows will result in a 0.

You may use any resources such as the book, a calculator, and Excel, but I guarantee if you are not prepared, you won’t be able to waste a lot of time trying to find the answer or approach to use in the book and complete the exam during the limited time. Exams are timed and will automatically stop when the time limit has been reached, and you must complete them in one sitting. You will not be allowed to backtrack to a previous question once it has been submitted. Should your Internet connection fail or Blackboard crash, you can restart where you left off, but the timer will keep running. So it is your responsibility to insure the integrity of your technology.
There are no exceptions to the exam and grading policies described here. As a student engaged in graduate level study it is your responsibility to review the syllabus, know the deadlines, and plan accordingly. Have a backup plan for potential Internet connection or other technology failures and do not leave assignments or exams to the last minute. If you have a family or medical emergency contact me as soon as you can; documented proof will need to be provided.

**Academic Integrity and Student Code of Conduct**

If you are not already familiar with the Student Code of Conduct, I suggest you go to [http://www.uc.edu/conduct/Code_of_Conduct.html](http://www.uc.edu/conduct/Code_of_Conduct.html) and read it carefully. In particular, I want to highlight the following:

**Academic misconduct definitions**

(a) **Aiding and abetting academic misconduct**

Knowingly helping, procuring or encouraging another person to engage in academic misconduct.

(b) **Cheating**

Any dishonesty or deception in fulfilling an academic requirement such as:

(i) Use or possession of unauthorized material or technological devices during an examination, an “examination” meaning any written, oral work or assessment submitted for evaluation or grade.  *(INSTRUCTOR NOTE: “UNAUTHORIZED MATERIAL” INCLUDES ANY WEBSITES THAT ILLEGALLY POST SOLUTIONS OR INFORMATION FROM FORMER STUDENTS.)*

(ii) Obtaining assistance with, or answers to, examination questions from another person with or without that person’s knowledge.

(iii) Furnishing assistance with, or answers to, examination questions to another person.

(iv) Possessing, using, distributing or selling unauthorized copies of an examination.

(v) Representing as one’s own an examination taken by another person.

(vi) Taking an examination in place of another person.

(vii) Obtaining unauthorized access to the computer files of another person or agency or altering or destroying those files.

(d) **Plagiarism**

(i) Submitting another’s published or unpublished work in whole, in part or in paraphrase, as one’s own without fully and properly crediting the author with footnotes, quotation marks, citations, or bibliographic references.

(ii) Submitting as one’s own original work, material obtained from an individual, agency, or the internet without reference to the person, agency or webpage as the source of the material.

(iii) Submitting as one’s own original work material that has been produced through unacknowledged collaboration with others without release in writing from collaborators.

(iv) Submitting one’s own previously written or oral work without modification and instructor permission.
It is considered cheating to take any exam with any other student or outside help from people or websites. Also, do not take any screen shots of quiz or exam questions. I will be glad to review exams with you either in my office or virtually.

Don’t be stupid, I have caught students in the past and they have been significantly penalized in their grade, not to mention receiving a strike toward the LCB “two strike dismissal” policy.

Course Grading Total Points for each course component are given in the table below:

<table>
<thead>
<tr>
<th></th>
<th>Module 1</th>
<th>Module 2</th>
<th>Module 3</th>
<th>Module 4</th>
<th>Module 5</th>
<th>Module 6</th>
<th>Module 7</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>30</td>
<td>26</td>
<td>18</td>
<td>28</td>
<td>24</td>
<td>16</td>
<td>8</td>
<td>150</td>
</tr>
<tr>
<td>Quizzes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment</td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td>12</td>
<td>8</td>
<td>80</td>
</tr>
<tr>
<td>Quizzes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exams</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td>Project</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Total Points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>900</td>
</tr>
</tbody>
</table>

This material can be challenging, so I use a very generous grading scale:

790 – 900 = A
750 – 789 = A-
700 – 749 = B+
650 – 699 = B
600 – 649 = B-
550 – 599 = C+
500 – 549 = C
0 – 499 = F

Course Schedule

The course runs from February 26 – April 21 with Spring Break between March 12-18. Start reading the book and viewing the lectures early to give you time to do the assignments and take the homework quizzes.

The detailed schedule is shown next. Pay careful attention to the dates to take the exams!
<table>
<thead>
<tr>
<th>Modules and Dates</th>
<th>Readings</th>
<th>PowerPoint Lectures</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 1&lt;br&gt;Feb 26 – Mar 4</td>
<td>Chapter 1 Pages 1-12&lt;br&gt;Chapter 8 pages 234-238&lt;br&gt;Chapter 8 pages 238-243&lt;br&gt;Chapter 8 pages 244-249&lt;br&gt;Chapter 8 Pages 249-258&lt;br&gt;Chapter 8 Pages 258-264</td>
<td>Lecture 1.1 Introduction to Business Analytics&lt;br&gt;Lecture 1.2 Trendlines&lt;br&gt;Lecture 1.3 Simple Linear Regression&lt;br&gt;Lecture 1.4 Interpreting Regression Output&lt;br&gt;Lecture 1.5 Multiple Linear Regression&lt;br&gt;Lecture 1.6 Advanced Regression Modeling</td>
<td>Lecture quizzes are due at the end of the day (11:59 pm) on &lt;strong&gt;Saturday March 3&lt;/strong&gt;. Assignment 1 quiz due at the end of the day (11:59 pm) on &lt;strong&gt;Sunday March 4&lt;/strong&gt;</td>
</tr>
<tr>
<td>Module 2&lt;br&gt;Mar 5 – Mar 11</td>
<td>Chapter 1 pages 18-30&lt;br&gt;Chapter 11 pages 342-349&lt;br&gt;Chapter 11 pages 349-358&lt;br&gt;Chapter 11 pages 362-368</td>
<td>Lecture 2.1 Models in Analytics&lt;br&gt;Lecture 2.1 Predictive Decision Modeling&lt;br&gt;Lecture 2.3 Modeling Applications&lt;br&gt;Lecture 2.4 Analyzing Uncertainty and Model Assumptions</td>
<td>Lecture quizzes are due at the end of the day (11:59 pm) on &lt;strong&gt;Saturday March 10&lt;/strong&gt;. Assignment 2 quiz due at the end of the day (11:59 pm) on &lt;strong&gt;Sunday, March 11&lt;/strong&gt;</td>
</tr>
</tbody>
</table>

**SPRING BREAK MARCH 12 – 18! NO FORMAL CLASS WORK REQUIRED**
Exam 1 open **Friday March 23** at 12:00 am to **Sunday March 25** at midnight. Covers Modules 1 and 2 only.

<table>
<thead>
<tr>
<th>Module 3</th>
<th>Chapter 5 pages 161-166</th>
<th>Lecture 3.1 Building Randomness into Models</th>
<th>Lecture quizzes are due at the end of the day (11:59 pm) on <strong>Monday March 26</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 19 – Mar 25</td>
<td>Chapter 12 pages 378-381</td>
<td>Lecture 3.2 Monte Carlo Simulation</td>
<td>Assignment 3 quiz due at the end of the day (11:59 pm) on <strong>Monday, March 26</strong>.</td>
</tr>
<tr>
<td></td>
<td>Chapter 12 pages 388-400</td>
<td>Lecture 3.3 Monte Carlo Simulation Examples</td>
<td><strong>NOTE THE EXTRA DAYS BECAUSE OF EXAM 1</strong></td>
</tr>
</tbody>
</table>

Begin work on project; due **Thursday April 5** at the end of the day.

<table>
<thead>
<tr>
<th>Module 4</th>
<th>Chapter 13 pages 416-422</th>
<th>Lecture 4.1 Introduction to Linear Optimization</th>
<th>Lecture quizzes are due at the end of the day (11:59 pm) on <strong>Saturday March 31</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 26 – Apr 1</td>
<td>Chapter 13 pages 422-427</td>
<td>Lecture 4.2 Using Solver for Linear Optimization</td>
<td>Assignment 4 quiz due at the end of the day (11:59 pm) on <strong>Sunday April 1</strong>.</td>
</tr>
<tr>
<td></td>
<td>Chapter 13 pages 428-439</td>
<td>Lecture 4.3 Understanding Solver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chapter 13 Pages 439-446</td>
<td>Lecture 4.4 What-If Analysis for Linear Optimization</td>
<td></td>
</tr>
</tbody>
</table>

Exam 2 open **Friday April 6** at 12:00 am to **Sunday April 8** at midnight. Covers Modules 3 and 4 only.

<table>
<thead>
<tr>
<th>Module 5</th>
<th>Chapter 14 pages 458-467</th>
<th>Lecture 5.1 Applications - Process Selection Models</th>
<th><strong>Project is due THURSDAY April 5 at the end of the day.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 2 – Apr 8</td>
<td>Chapter 14 pages 467-470</td>
<td>Lecture 5.2 Applications - Blending Models</td>
<td>Lecture quizzes are due at the end of the day (11:59 pm) on <strong>Monday April 9</strong>.</td>
</tr>
<tr>
<td></td>
<td>Chapter 14 pages 471-476</td>
<td>Lecture 5.3 Applications - Portfolio Investment Models</td>
<td>Assignment 5 quiz due at the end of the day (11:59 pm) on <strong>Monday, April 9</strong>.</td>
</tr>
<tr>
<td></td>
<td>Chapter 14 pages 476-480</td>
<td>Lecture 5.4 Applications - Transportation Models</td>
<td><strong>NOTE THE EXTRA DAYS BECAUSE OF EXAM 2.</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 14 pages 480-489</td>
<td>Lecture 5.5 Applications - Multiperiod Models</td>
<td></td>
</tr>
</tbody>
</table>

Lecture quizzes are due at the end of the day (11:59 pm) on **Monday April 9**.
| Module 6 | Apr 9– Apr 15 | Chapter 14 | Lecture 6.1 Applications – Models with Bounded Variables  
Lecture 6.2 Using Sensitivity Analysis Correctly  
Lecture 6.3 Introduction to Integer Optimization  
Lecture 6.4 Applications of Integer Optimization | Lecture quizzes are due at the end of the day (11:59 pm) on Saturday April 14.  
Assignment 6 quiz due at the end of the day (11:59 pm) on Sunday, April 15 |
|---|---|---|---|
| Chapter 14 | pages 489-497  
Chapter 14 | pages 497-498  
Chapter 15 | pages 514-517  
Chapter 15 | pages 517-523 |
| Module 7 | Apr 16 – Apr 21 | Chapter 15 | Lecture 7.1 Integer Optimization with Binary Variables | Lecture quizzes are due at the end of the day (11:59 pm) on TUESDAY, April 17.  
Assignment 7 quiz due at the end of the day (11:59 pm) on WEDNESDAY, April 18 |
| Chapter 15 | pages 523-529 |

Exam 3 open Thursday APRIL 19 at 12:00 am to Saturday APRIL 21 at midnight. Covers Modules 5 and 6 only. NOTE THE THURSDAY – SATURDAY WINDOW WHICH IS DIFFERENT FROM EXAMS 1 AND 2!!!