BUS 210: Business Analytics I
Spring 2016 Course Syllabus
Lecture Section 001 MW 10:30-11:45 AM, Exploratory Hall L111

This syllabus is tentative. I reserve the right to add, remove or alter this syllabus as needed throughout the semester.

Instructor: Abhijit Dutt, PhD
Assistant Professor of ISOM
Office: 139, Enterprise Hall
Phone: (703) 993 – 5798 (Do not leave a message, email is the best way to contact me)
Fax: (703) 993 – 1809
E-mail: adutt@gmu.edu
Office Hours: Mondays 12:30 – 1:00 PM and Wednesdays 1:00—4:30 PM; and by appointment. If I am in my office it is OK to drop by.

Prerequisites:
Essential and expected knowledge: Proficiency in elementary algebra and geometry. Familiarity with MS Word, PowerPoint, and Excel. It is your responsibility to make up any deficiencies.

Required Texts and Learning Materials:
Chapters 3 and 7 are available for individual purchase for $13.99 each. The purchase of a chapter will include Appendix A.
http://www.cengagebrain.com/shop/isbn/9781285187273

University Catalog Description:
This course introduces the concept of business analytics and why businesses use analytics to create and sustain competitive advantage. Topics include data types, summarization and graphical display of data, application of basic probability rules, and probability distributions. The course also introduces students to fundamentals of spreadsheets and their use in business applications.

Approach to Learning:
This course is geared towards the future business professional engaged in decision making or decision support. The emphasis is on business applications, and not mathematics. Lectures are the formal presentation and teaching of the material and basic problem solving skills; discussions and questions are highly encouraged.
The basic learning objectives of this course are for students to:

1. Understand and apply statistical methodologies and techniques to solve typical business problems.
2. Understand a business situation and recognize the type of problem, to formulate the problem quantitatively, and to associate the appropriate probabilistic model and statistical technique.
3. Master the essentials of the concepts and tools of data representation, and probability models, emphasizing business applications through problems.
4. Develop the critical thinking and independent problem solving skills necessary to independently analyze business data and model business situations.
5. Use software tools (MS-Excel) to perform statistical analysis.
6. Foster the communication and presentation of statistical results and inferences.
7. Learn how to enter, organize, update, and analyze data appropriate to different business scenarios using the Microsoft Excel spreadsheet software package.
8. Become aware of the uses and familiar with the capabilities of spreadsheets in business.

Undergraduate program learning goals (those in bold will be addressed in this class):

1. Our students will be competent in their discipline.
2. Our students will be aware of the uses of technology in business.
3. Our students will be effective communicators.
4. Our students will have an interdisciplinary perspective.
5. Our students will be knowledgeable about global business and trade.
6. Our students will recognize the importance of ethical decisions.
7. Our students will be knowledgeable about the legal environment of business.
8. Our students will be knowledgeable about team dynamics and the characteristics of effective teams.
9. Our students will understand the value of diversity and the importance of managing diversity in the context of business.
10. Our students will be critical thinkers.

Course Policies:

- Access to the internet and a computer is required. Many of the course material will be online in our Blackboard course. A third of this class will be doing analysis in Excel, so having access to a computer with Excel is required. Also the quizzes and some part of the tests will be administered through Blackboard. **Hence, you must bring your laptop to class every day.**
- Computers, laptops and cell phones may NOT be used during class lectures or discussions unless it is specifically directed by the instructor.
- Communication will be via Blackboard and/or your GMU e-mail only; also please make sure that you mention your class and section number in the subject. I will only respond to gmu.edu e-mails and will not respond to e-mails written on a private account.
- You must finish the assigned reading for the week before classes every week. The week 1 is an exception. You should be able to discuss the reading material in class and your participation grade will be dependent on that.
• Attendance will be taken at every class. I will only allow two unexcused absences during the semester. Any class material missed by the student is the student's responsibility to acquire.

• There will be two midterm tests and a final test. The format of the tests will be discussed in class. No makeup examination will be given. There will also be a few Quizzes administered through Blackboard. Quiz with lowest grade will be dropped.

• All the assignments are due on the previous day of a class at midnight. Late assignments will receive at least a 10% penalty unless prior approval is given. No assignment will be accepted more than 1 week late without my approval.

• All academic accommodations due to disability must be arranged through the Office of Disability Services (ODS). If you are a student with a disability and you require academic accommodations, please contact ODS at 703-993-2474. I will cooperate fully with the ODS to accommodate a student’s special needs.

• Students with differing abilities should arrange to meet with me by the end of the first week of classes to arrange for reasonable accommodations for their learning needs.

• Athletes with travel schedules should meet with me by the end of the first week of classes to discuss any necessary arrangements that need to be made.

• Arrangements for any religious observances or GMU sanctioned activity must be arranged with the instructor at least one week prior to the event.

• By remaining registered in the course through drop/add period, you agree to all terms and policies set forth in the syllabus.

• Students must be officially registered in this section to receive a grade. It is the sole responsibility of the student to verify their own registration status. (I will not verify your registration.) Specifically, you will not receive a grade if your name does not appear on the official class list. (Don’t wait until the end of the semester to be surprised.) Registration problems should be directed to either the SOM Office of Student Services or the Registrar’s Office.

**Academic Integrity:** It is expected that students adhere to the George Mason University Honor Code as it relates to integrity regarding coursework and grades. The Honor Code reads as follows: “To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this: Student members of the George Mason University community pledge not to cheat, plagiarize, steal and/or lie in matters related to academic work.” More information about the Honor Code, including definitions of cheating, lying, and plagiarism, can be found at the Office of Academic Integrity website at [oai.gmu.edu](http://oai.gmu.edu)

Mason takes instances of academic dishonesty very seriously. While the faculty have the authority to recommend the academic and educational sanctions for Honor Code violations listed below, there can be additional consequences based on the College your program is housed in. At the very least a **disciplinary record is created** whenever a student is found responsible for violating the honor code.
Typical academic sanctions include but are not limited to:

1. A Grade Reduction on the assignment
2. A rewrite of a paper with a grade reduction
3. Zero on the assignment
4. A grade reduction in the course
5. F in the course
6. Academic suspension
7. Permanent dismissal from the institution

Course Topics:

- Data types
  - Qualitative vs. quantitative
  - Qualitative: Ordinal vs. nominal
  - Quantitative: Discrete vs. continuous
  - Measurement scales: Interval vs. ratio
- Data presentation: Tabular and graphical methods
  - Frequency, relative frequency, and cumulative distributions
  - Frequency and relative frequency histograms
- Data summarization: Numerical summary sample statistics (and population parameters)
  - Mean, Median, Mode, Midrange, Midquartile, Range, Interquartile range (and IQR/R)
  - Variance, Standard deviation, Coefficient of Variation
- Probability
  - Joint, Marginal and Conditional probability
  - Probability rules
  - Bayes’ Law
- Random Variables and Discrete Probability distributions
  - Random variables and probability distributions
  - Uniform distribution
  - Binomial distribution
  - Poisson distribution
- Continuous Random Variables and Probability distributions
  - Probability density functions
  - Normal distribution
- Business Spreadsheets
  - Relative and absolute references
  - Using formulas involving arithmetic operators +, -, *, and /
  - Using parentheses and percentage calculations
  - Numbering formats, e.g., currency, accounting, comma, percent, etc.
  - Copy formulas and filling neighboring ranges with data and data series
  - Testing conditions (involving =, <, >, <=, >=, AND, OR, etc.)
    - “IF” statements, including Nested-IFs
o Using Statistical functions
o Using financial functions
o Conditional formatting and copying/removing formats
o Creating simple graphs/charts from a spreadsheet data range (e.g., bar/line/pie charts, 2d/-3d-charts, etc.),
  ▪ When to use each chart type
o Working with data in tables
  ▪ Sorting, filtering etc.
  ▪ Grouping/separating data in a table, generating subtotals, creating summaries
  ▪ Designing, building, using, and adding to/modifying PivotTables
o Writing formulas linking data in multiple sheets in a workbook
o LOOKUP, VLOOKUP, HLOOKUP
o Goal Seek
o Cross Tabs

Methods of Student Evaluation:

Students will be evaluated based on homework, quizzes, exams, and class activities. The total possible number of points that can be earned during the semester is 500.

<table>
<thead>
<tr>
<th>Item</th>
<th>Points</th>
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<tbody>
<tr>
<td>Two tests</td>
<td>200</td>
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<tr>
<td>Final</td>
<td>150</td>
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<tr>
<td>Quiz</td>
<td>50</td>
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<tr>
<td>Homework, Assignments</td>
<td>75</td>
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<tr>
<td>Participation</td>
<td>25</td>
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Grading Scheme:

<table>
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<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>92.5%-100%</td>
<td>A</td>
</tr>
<tr>
<td>89.5%-92.49%</td>
<td>A-</td>
</tr>
<tr>
<td>87.5%-89.49%</td>
<td>B+</td>
</tr>
<tr>
<td>81.5%-86.49%</td>
<td>B</td>
</tr>
<tr>
<td>79.5%-81.49%</td>
<td>B-</td>
</tr>
<tr>
<td>77.5%-79.49%</td>
<td>C+</td>
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<tr>
<td>69.5%-77.49%</td>
<td>C</td>
</tr>
<tr>
<td>59.5%-69.49%</td>
<td>D</td>
</tr>
<tr>
<td>below 59.49%</td>
<td>F</td>
</tr>
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</table>

A+ may be awarded for exemplary performance
# BUS 210: SPRING 2016

**TENTATIVE COURSE SCHEDULE: THIS SCHEDULE MAY CHANGE.**

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topics</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/20</td>
<td>Course Orientation, Introduction to Statistics</td>
<td>ES Chapter 1</td>
</tr>
<tr>
<td></td>
<td>1/25-1/27</td>
<td>No Class, Snow</td>
<td></td>
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<tr>
<td>2</td>
<td>2/1-2/3</td>
<td>Basics of Excel, Summarizing Categorical and Quantitative Variables, Summarizing Data for Two Variables, , Pivot Table</td>
<td>BA Appendix A, ES Chapters 1 &amp; 2</td>
</tr>
<tr>
<td>3</td>
<td>2/8-2/10</td>
<td>Quiz #1 (2/8), Data Visualization</td>
<td>ES Chapter 2</td>
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<tr>
<td>4</td>
<td>2/15-2/17</td>
<td>Quiz #2 (2/15), Descriptive Statistics: Measures of Location and Variability Five-Number Summaries and Box Plots Measures of Association</td>
<td>ES Chapter 3, BA Chapter 3</td>
</tr>
<tr>
<td>5</td>
<td>2/22-2/24</td>
<td>Quiz #3 (2/22), Descriptive Statistics: Five-Number Summaries and Box Plots Measures of Association, Data Visualization,</td>
<td>ES Chapter 3, BA Chapter 3</td>
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<tr>
<td>6</td>
<td>2/29-3/2</td>
<td>Exam #1 - Monday February 29, Introduction to Probability, Discrete Probability Distributions</td>
<td>ES Chapters 4 &amp; 5</td>
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<td>3/7-3/9</td>
<td>Spring Break</td>
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<td>7</td>
<td>3/14-3/16</td>
<td>Introduction to Probability, Discrete Probability Distributions, Quiz #4 (3/16)</td>
<td>ES Chapters 4 &amp; 5</td>
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<td>9</td>
<td>3/28-3/30</td>
<td>Continuous Probability Distributions</td>
<td>ES Chapter 6</td>
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<td>10</td>
<td>4/4-4/6</td>
<td>Quiz #5 (4/4), Continuous Probability Distributions</td>
<td>ES Chapter 6</td>
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<tr>
<td>11</td>
<td>4/11-4/13</td>
<td>Continuous Probability Distributions</td>
<td>ES Chapter 6</td>
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<td>12</td>
<td>4/18-4/20</td>
<td>Quiz #6 (4/18), Spreadsheet Models</td>
<td>BA Chapter 7</td>
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<td>13</td>
<td>4/25-4/27</td>
<td>Spreadsheet Models</td>
<td>BA Chapter 7</td>
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<tr>
<td>14</td>
<td>5/2-5/4</td>
<td>Quiz #7 (5/2), Review and catch up</td>
<td></td>
</tr>
<tr>
<td>5/6</td>
<td>Final Exam – 9:45-11:45 AM (Friday)</td>
<td><a href="http://registrar.gmu.edu/calendars/spring-2016/final-exams/">http://registrar.gmu.edu/calendars/spring-2016/final-exams/</a></td>
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