BUS 310: Business Analytics II  
Spring 2016 Course Syllabus  
BUS 310 005 Tue/Thu 12:00-1:15pm Mason Hall D001

Instructor:  Toni Garcia  
Office:  ENT 019  
Phone:  703-993-1829  
Fax:  703-993-1809  
E-mail:  tgarcia3@gmu.edu  
Office Hours:  Please check your Blackboard course for updated office hours

Prerequisites:  
1. BUS 210 or equivalent with a grade of C or better  
2. Essential and expected knowledge: Proficiency in elementary algebra and geometry.  
   Familiarity with recent versions of MS Word, PowerPoint, and Excel. Deficiencies in any of these areas should be self-remediated.

University Catalog Description:  
This course introduces the concepts of modeling relationships contained in data and the use of linear models to make predictions in business. Topics include estimation, hypotheses testing, statistical inference, analysis of variance and linear regression techniques. The course also introduces students to fundamentals of linear programming to solve optimization problems 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.

This syllabus is subject to change. Any changes to this syllabus will be formally announced in Blackboard.
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.

Required Texts and Learning Materials:


   Chapter 8 is available for individual purchase for $13.99 each. [http://www.cengagebrain.com/shop/isbn/9781285187273](http://www.cengagebrain.com/shop/isbn/9781285187273)

Computer/Software/Email:

Access to the internet and a computer is required. Many of the course material will be online in our Blackboard course. Communication will be via Blackboard and/or your GMU e-mail only. I will only respond to gmu.edu e-mails and will not respond to e-mails written on a private account.

The PC version of Microsoft Excel 2013 will be used in this class. The student is required to bring a laptop to class with Excel.

Microsoft Excel 2013 is available for download for GMU students. The software may run only on a computer with the appropriate Microsoft Windows operating system. During this class, we are unable to provide advice and support for the use of Macintosh computers and other versions of this software.

It is your responsibility to make sure your assignments meet the required PC standards. If you have a Mac, you may need to have a dual-booting or virtual machine to run the Microsoft Excel program correctly.

Methods of Student Evaluation:

Students will be evaluated based on homework, quizzes, exams, and class activities.

Grading –

- Homework, Excel assignments, Class Work, Quizzes: 35%
- Exam 1 and Exam 2: 40%
- Final Exam: 25%

CELL PHONES MUST BE TURNED OFF DURING CLASS

Note: DISRUPTIVE BEHAVIOR WILL NOT BE TOLERATED
Course Grade

1. 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 School of Business Academic Advisors or the Registrar’s Office.

2. The final letter grade is assigned objectively and strictly according to the WEIGHTED average of the numerical scores of all exams, quizzes, and assignments.

3. Final course letter grade assignments:

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<thead>
<tr>
<th>COURSE AVERAGE</th>
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<th>COURSE AVERAGE</th>
<th>COURSE GRADE</th>
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<tbody>
<tr>
<td>97.00 to 100</td>
<td>A+</td>
<td>80.00 to 82.99</td>
<td>B-</td>
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<tr>
<td>93.00 to 96.99</td>
<td>A</td>
<td>77.00 to 79.99</td>
<td>C+</td>
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<tr>
<td>90.00 to 92.99</td>
<td>A-</td>
<td>70.00 to 76.99</td>
<td>C</td>
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<tr>
<td>87.00 to 89.99</td>
<td>B+</td>
<td>60.00 to 69.99</td>
<td>D</td>
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<tr>
<td>83.00 to 86.99</td>
<td>B</td>
<td>0 to 59.99</td>
<td>F</td>
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EXAMS: Exam dates are provided in the schedule. No make-up exams will be given except in Documented Emergency. Each will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for them is regular attendance and completion of assigned homework and reading.

Attendance: Class attendance is essential part of learning for this course. If you have to miss any lectures, you are responsible for obtaining any information given in the class. I will take attendance on random days.

Homework, Quizzes & Class Work:

Students are expected to read relevant sections of the textbook prior to attending class. Written homework, quizzes, and class work will be graded. Students may work together on homework, but each individual student is required to submit their own work. Due dates will be given in class, and are on posted on Blackboard. Late assignments will not be accepted. Quizzes and class work are given at the discretion of the instructor and frequently reflect material that has recently been discussed in class. To encourage attendance, instructors will not give makeup quizzes or class work.

Disability: 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.
Course Objectives:
This course examines the use of statistical methods as analytical tools for understanding and analyzing business problems, and for supporting business decision-making. Topics will include: Sampling and Sampling Distributions, Interval Estimation, Hypothesis Testing, Statistical Inference, Tests of Goodness of Fit and Independence, Linear Regression, and Linear Programming and Optimization. It is geared for the business professional engaged in decision making or decision support. The emphasis is on business applications, and not mathematics. Students will also possess an adequate level of proficiency in and comfort with spreadsheet software. The format will be lectures, but discussions and questions are highly encouraged.

ADDITIONAL INFORMATION

• The best way to reach me is by e-mail. My office phone number is not a reliable way to leave a message for me.
• 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.

Course Topics:

• Sampling and sampling distributions
  o Sampling distribution of sample means
  o Sampling distribution of sample proportions
  o Central Limit Theorem
• Estimation theory
  o Concepts of estimation
  o Point estimation
  o Confidence interval estimation for means
  o Sample size estimation
• Basic hypothesis testing: One Sample
  o Null and alternative hypotheses
  o Type I and Type II errors and their probabilities
  o One-tail and two-tail tests
  o Hypothesis tests of a claimed population mean
  o Hypothesis tests of a claimed population proportion
• Hypothesis testing: Two Samples
  o Comparison of two population means
  o Comparison of two population variances (F-tests)
  o Analysis of variance (ANOVA)
  o Test of independence
  o Testing equality of two independent samples (t-tests)
• Hypothesis testing involving proportions
  Test of Goodness of Fit (Using Chi-square statistic)
  Test of Independence (Using Chi-square statistic)
• Simple linear regression and correlation
  o Simple linear regression model
  o Estimation of coefficients
  o Assessing the model
  o Using the estimated regression equation: estimation and prediction
• Multiple linear regression
  o The multiple regression model
  o Estimation of coefficients
  o Assessing the model (Selection of variables - testing for significance)
  o Using the estimated regression equation: estimation and prediction
• Linear optimization
  o Model Development
  o Data Selection and Preparation
  o Graphical Solutions (Two decision variables problems)
  o Use of Excel Solver to solve problems with more than two decision variables

**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. One semester or year non academic suspension
7. Permanent dismissal from the institution

Educational Sanctions can also be included. These sanctions may be:

1) Writing Center Visits (no more than three sessions)
2) Academic Integrity Seminar
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<thead>
<tr>
<th>Dates</th>
<th>Topics</th>
<th>Reading</th>
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<tr>
<td>1/18-1/22</td>
<td>Course Orientation</td>
<td>ES Chapter 7</td>
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<td>Highlights of Sampling Distributions</td>
<td>ES Chapter 8</td>
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<td>Interval Estimation</td>
<td>ES Chapter 8</td>
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<td>1/25-1/29</td>
<td>Interval Estimation</td>
<td>ES Chapter 8</td>
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<tr>
<td>2/1-2/5</td>
<td>Hypothesis Tests</td>
<td>ES Chapter 9</td>
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<td>2/8-2/12</td>
<td>Hypothesis Tests</td>
<td>ES Chapter 9</td>
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<td>2/15-2/19</td>
<td>Comparisons Involving Means</td>
<td>ES Chapter 10</td>
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<td>2/22-2/26</td>
<td>Comparisons Involving Means</td>
<td>ES Chapter 10</td>
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<td><strong>Exam 1 – Thursday February 25</strong></td>
<td>ES Chapter 10</td>
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<tr>
<td>2/29-3/4</td>
<td>Analysis of Variance</td>
<td>ES Chapter 10</td>
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<td>3/7-3/11</td>
<td><strong>Spring Break – No Class</strong></td>
<td>ES Chapter 11</td>
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<td>3/14-3/18</td>
<td>Inferences for Proportions</td>
<td>ES Chapter 11</td>
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<td>3/21-3/25</td>
<td>Inferences for Proportions</td>
<td>ES Chapter 11 and 12</td>
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<td>3/28-4/1</td>
<td>Simple Linear Regression</td>
<td>ES Chapter 12</td>
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<td>4/4-4/8</td>
<td>Multiple Linear Regression</td>
<td>ES Chapter 13</td>
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<td><strong>Exam 2 – Thursday April 7</strong></td>
<td>ES Chapter 13</td>
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<tr>
<td>4/11-4/15</td>
<td>Multiple Linear Regression</td>
<td>ES Chapter 13</td>
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<td>4/18-4/22</td>
<td>Linear Programming</td>
<td>BA Chapter 8</td>
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<td>4/25-4/29</td>
<td>Optimization</td>
<td>BA Chapter 8</td>
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<td>5/2-5/6</td>
<td><strong>We have class on Tuesday May 3rd</strong></td>
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<td><strong>Final Exam</strong></td>
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<td><strong>Thursday May 5th</strong></td>
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