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

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:
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 MS Word, PowerPoint, and Excel.

Required Texts and Learning Materials:
Chapters 8 is available for individual purchase for $13.99 each.
http://www.cengagebrain.com/shop/isbn/9781285187273

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.

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.
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.

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

**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. 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.

• 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 issues should be directed to either the SOM Office of Student Services or to the Registrar.

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

**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

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

**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>
</tr>
</thead>
<tbody>
<tr>
<td>Two tests</td>
<td>200</td>
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<tr>
<td>Final</td>
<td>150</td>
</tr>
<tr>
<td>Quiz (Highest 3)</td>
<td>45</td>
</tr>
<tr>
<td>Homework, Assignments</td>
<td>75</td>
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<tr>
<td>Participation</td>
<td>30</td>
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</tbody>
</table>
Grading Scheme:

| 92.5%-100% | A | 81.5%-86.49% | B | 69.5-77.49% | C |
| 89.5%-92.49% | A- | 79.5%-81.49% | B- | 59.5%-69.49% | D |
| 87.5%-89.49% | B+ | 77.5%-79.49% | C+ | below 59.49% | F |

A+ may be awarded for exemplary performance

**BUS 310: SPRING 2016**

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

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topics</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/20</td>
<td>Course Orientation, Review of BUS 210 and Excel, Highlights of Sampling Distributions</td>
<td>ES Chapter 7</td>
</tr>
<tr>
<td>1/27</td>
<td>No Class, Snow</td>
<td></td>
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<tr>
<td>2/1-2/3</td>
<td>Highlights of Sampling Distributions, Excel, Interval Estimation</td>
<td>ES Chapters 7 &amp; 8</td>
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<tr>
<td>2/8-2/10</td>
<td>Interval Estimation, Hypothesis Tests, <strong>Quiz 1 – Wednesday February 10</strong></td>
<td>ES Chapter 8 &amp; 9</td>
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<tr>
<td>2/15-2/17</td>
<td>Comparisons Involving Means, <strong>Quiz 2 – Wednesday February 17</strong></td>
<td>ES Chapter 10</td>
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<tr>
<td>2/22-2/24</td>
<td>Comparisons Involving Means, <strong>Exam 1 – Wednesday February 24</strong></td>
<td>ES Chapter 10</td>
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<tr>
<td>2/29-3/2</td>
<td>Analysis of Variance</td>
<td>ES Chapter 10</td>
</tr>
<tr>
<td>3/7-3/9</td>
<td><strong>Spring Break – No Class</strong></td>
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<tr>
<td>3/14-3/16</td>
<td>Inferences for Proportions</td>
<td>ES Chapter 11</td>
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<tr>
<td>3/21-3/23</td>
<td>Inferences for Proportions, <strong>Exam 2 – Wednesday March 23</strong></td>
<td>ES Chapter 11</td>
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<tr>
<td>3/28-3/30</td>
<td>Simple Linear Regression</td>
<td>ES Chapter 12</td>
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<tr>
<td>4/4-4/6</td>
<td>Simple Linear Regression, Multiple Linear Regression</td>
<td>ES Chapters 12 &amp; 13</td>
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<td>4/11-4/13</td>
<td><strong>Quiz 3 – Monday April 11, Multiple Linear Regression</strong></td>
<td>ES Chapter 13</td>
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<td>4/18-4/20</td>
<td>Multiple Linear Regression, <strong>Quiz 4 – Wednesday April 20</strong></td>
<td>ES Chapter 13</td>
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<td>4/25-4/27</td>
<td>Linear Programming, Optimization</td>
<td>BA Chapter 8</td>
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<tr>
<td>5/2-5/4</td>
<td><strong>Quiz 5 – Monday May 2, Optimization, Review</strong></td>
<td>BA Chapter 8</td>
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BUS 310, Spring 2016, Abhijit Dutt