Course Description

In this course, we will focus on learning various statistical techniques and their applications that will assist you in making business decisions. The primary objective of this course is to enable students to explain and perform statistical analysis of data, with the view of being able to critically evaluate statistical reports or findings. You will learn to think critically about how statistics is used by others and how it impacts your day-to-day life and career. No mathematical background beyond high school algebra is required for an understanding of the material.

Course Learning Objectives

You will explore and describe data, examine sampling distributions, make estimations, test hypotheses, perform simple and multiple regression analysis, and build models using extensive software applications both independently and collaboratively.

These applications will guide you to:

1. Explain the concepts of descriptive statistics and use sample statistics to make inferences about population characteristics;
2. Recognize different models of statistical processes such as hypothesis testing and linear and multiple regression, etc.;
3. Explain statistical processes and choose which process to use for particular data analysis applications;
4. Learn to interpret statistical results as a basis for decision making;
5. Learn to use applicable statistics software;
6. Collaborate effectively to use statistical analysis to address business challenges
7. Communicate your interpretation of the results of statistical analysis logically and persuasively in speaking and writing.

These course level objectives support the six Marshall Program Learning Goals to varying degrees. Details may be found in the Appendix of this syllabus.

Required Materials


Prerequisites and/or Recommended Preparation:

No mathematical background beyond high-school algebra is required.
**Course Notes:**

The slides for the course and other handouts will be posted on the course Blackboard site. If you would like hard copies of the slides, it will be your responsibility to print them out. Please check the Blackboard site and your email daily for class preparation materials or instructions.

**Software:**

For the discussions/application sessions, students are required to bring a laptop with Microsoft Excel software. Mac users need to have either the Mac version of Excel 2016 or they can use the PC version by installing Boot Camp (free from Apple) - or other Windows emulation software for Mac - and Windows, or by using the Marshall Virtual Lab. Students can take advantage of the free version of Office 365 that USC provides to students, which includes MS Excel. The free Microsoft USC Office Suite can be downloaded from http://itservices.usc.edu/officestudents/. In addition, the Analysis ToolPak add-in is also required, which can be accessed in the PC environment by clicking on File/Options/Add-ins/Go, checking Analysis ToolPak and clicking OK. The procedure is similar for Macs.

**Grading:**

Your final grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component of Grade</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20.0%</td>
</tr>
<tr>
<td>Application Exercises</td>
<td>15.0%</td>
</tr>
<tr>
<td>In Class Participation</td>
<td>15.0%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20.0%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30.0%</td>
</tr>
</tbody>
</table>

Final grades represent how you perform in the class relative to other students. Your grade will not be based on a mandated target, but on your performance. The average grade for this class is expected to average about 3.0. Three items are considered when assigning final grades:

1. Your average weighted score as a percentage of the available points for all assignments (the points you receive divided by the number of points possible).
2. The overall average percentage score within the class.
3. Your ranking among all students in the class.

**Class Attendance & Participation:**

You are expected to attend all classes. Class attendance is helpful and allows you to interact with other students when learning about statistical concepts through demonstrations, class exercises, and Excel assignments. Class helps clarify material and lets you do work in class that you would otherwise have to do at home to master the material, but attendance will not be taken. In cases of borderline grades, strong participation will be rewarded. Poor attendance cannot earn a grade above 90%.
I have no problem going over a concept multiple times. If you feel uneasy bringing up your questions in class, take advantage of the many opportunities to speak with me one-on-one. I am accessible by e-mail, and will be more than happy to speak with you before or after class or during office hours. Note: if your question requires a conversation rather than a short answer, email is not the best way to go – please talk to me after class or during office hours, and I will be happy to answer your question.

**Technology Policy:**

Laptops may be used in the lecture, but only if the use is related to what is being discussed in class, such as going over PPT slides or working on a specific problem. **Using a laptop for email, social media, work for other classes, etc. is strictly prohibited.** Students found to be violating this policy will be asked to leave the lecture hall. Use of other personal communication devices, such as cell phones, is considered unprofessional and is not permitted during lecture. Use of any recorded or distributed material is reserved exclusively for the USC students registered in this class.

**Homework:**

There will be six (6) homework assignments. You will view your assignments and submit the answers online, using Blackboard. Typed or scanned submissions are accepted as Word documents or pdfs (jpeg files or other image files not accepted). Due dates will be specified for each HW assignment. See Blackboard for updates on homework due dates.

**Application Exercises:**

You will regularly work collaboratively to use Excel to perform analysis and present conclusions. The exercises will be constructed in order to lead you through key topics introduced in lectures and reading. Your grade will be based on quality of your participation and submissions.

**Midterm Exam and Final Exam:**

The midterm and final exams will be given in class on the dates announced in the course schedule (page 6). You may bring a single handwritten sheet (both sides) containing formulas to the midterm and you will be allowed two handwritten sheets (both sides) for the final exam. **You will receive a grade of zero for each missed test** unless you have a written excuse from your doctor or the University.

The final examination will take place on **Tuesday, July 31, 2018, 9:00 am-11:25 am.** The final exam is comprehensive (this is inevitable in a Statistics course) but greater emphasis will be given to the material taught later in the semester. You **cannot** be exempted from this final under any circumstances. **The final exam will NOT be given at any other time.**

Note that according to the USC Office of Academic Records and Registrar, “**No student in a course with a final examination is permitted to omit the final examination or take the final examination prior to its scheduled date, and no instructor is authorized to permit a student to do so. No student is allowed to re-take a final examination or do extra work in a course after the semester has ended for purposes of improving his or her grade.**”

**Collaboration Policy:**

Discussion of homework and application problems is not only permitted, it is encouraged; however, each student is required to prepare and submit his or her solutions, including computer work, independently. **Collaboration of any sort on tests and exams is prohibited and will result in a 0 on that exam.** I reserve the right to bring any potential cheating issues to the administration for further penalties.
Add/Drop Process:
The last day to register and add classes is May 30, 2018. The last day to drop a class without a mark of “W” is also May 30, 2018. For more information, visit https://classes.usc.edu/term-20182/calendar/

Academic Integrity and Conduct:
Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” https://policy.usc.edu/scampus-part-b/. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu or to the Department of Public Safety http://adminopsnet.usc.edu/department/department-public-safety. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage http://sarc.usc.edu describes reporting options and other resources.

Students with Disabilities:
USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs (www.usc.edu/disability). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: ability@usc.edu.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. https://engemannshc.usc.edu/rsvp/
Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. https://equity.usc.edu/

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. https://studentaffairs.usc.edu/bias-assessment-response-support/

Student Support & Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC – https://diversity.usc.edu/
Tabs for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students

Class Notes Policy:

Notes or recordings made by students based on a university class or lecture may only be made for purposes of individual or group study, or for other non-commercial purposes that reasonably arise from the student’s membership in the class or attendance at the university. This restriction also applies to any information distributed, disseminated or in any way displayed for use in relationship to the class, whether obtained in class, via email or otherwise on the Internet, or via any other medium. Actions in violation of this policy constitute a violation of the Student Conduct Code, and may subject an individual or entity to university discipline and/or legal proceedings.

Emergency Preparedness/Course Continuity:

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.
The schedule below shows the topics covered each week in lecture and the corresponding reading assignments from the text book.

**Schedule**

*Note: Subject to Modification*

See Blackboard for topic detail, assignment due dates, required reading, and other posted announcements and materials.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Thurs 5/17</td>
<td>Introduction</td>
<td>Ch 1.1 - 1.5</td>
</tr>
<tr>
<td>2</td>
<td>Tues 5/22</td>
<td>Describing and representing data</td>
<td>Ch 2.1, 2.2, 3.2 - 3.9</td>
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<tr>
<td></td>
<td>Thurs 5/24</td>
<td>Describing and representing data cont.</td>
<td>Ch 4.1 - 4.6</td>
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<td></td>
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<td></td>
<td>HOMEWORK DUE - THURSDAY 5/31 at 11:59 PM</td>
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<tr>
<td>3</td>
<td>Tues 5/29</td>
<td>Probability</td>
<td>Ch 5.1 - 5.5</td>
</tr>
<tr>
<td></td>
<td>Thurs 5/31</td>
<td>Probability cont.</td>
<td>HOMEWORK DUE - THURSDAY 6/7 at 11:59 PM</td>
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<tr>
<td>4</td>
<td>Tues 6/5</td>
<td>Discrete Probability Distributions</td>
<td>Ch 6.1, 6.2, 6.4, 6.5, 6.8</td>
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<tr>
<td></td>
<td>Thurs 6/7</td>
<td>Continuous Probability Distributions</td>
<td>Ch 7.1 - 7.4</td>
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<td>HOMEWORK DUE - THURSDAY 6/14 at 11:59 PM</td>
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<tr>
<td>5</td>
<td>Tues 6/12</td>
<td>Sampling Distributions and Estimation</td>
<td>Ch 8.1 - 8.3</td>
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<td></td>
<td>Thurs 6/14</td>
<td>Confidence Intervals</td>
<td>Ch 8.4 - 8.6</td>
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<td>HOMEWORK DUE - THURSDAY 6/21 at 11:59 PM</td>
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<td>6</td>
<td>Tues 6/19</td>
<td>Review Session</td>
<td></td>
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<tr>
<td></td>
<td>Thurs 6/21</td>
<td>MIDTERM EXAM</td>
<td></td>
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<tr>
<td>7</td>
<td>Tues 6/26</td>
<td>Testing of Hypothesis</td>
<td>Ch 9.1 - 9.3</td>
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<td></td>
<td>Thurs 6/28</td>
<td>Testing of Hypothesis cont.</td>
<td>Ch 9.4 - 9.6</td>
</tr>
<tr>
<td>8</td>
<td>Tues 7/3</td>
<td>Chi-squared tests</td>
<td>Ch 15.1 - 15.2</td>
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<td></td>
<td>Thurs 7/5</td>
<td>Concept Check / Review</td>
<td>HOMEWORK DUE - THURSDAY 7/10 at 11:59 PM</td>
</tr>
<tr>
<td>9</td>
<td>Tues 7/10</td>
<td>Linear regression model</td>
<td>Ch 12.1 - 12.4</td>
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<tr>
<td></td>
<td>Thurs 7/12</td>
<td>Linear regression cont.</td>
<td>Ch 12.6 - 12.8</td>
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<tr>
<td>10</td>
<td>Tues 7/17</td>
<td>Multiple Regression</td>
<td>Ch 13.1 - 13.4</td>
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<tr>
<td></td>
<td>Thurs 7/19</td>
<td>Multiple Regression, cont.</td>
<td>Ch 13.5 - 13.8</td>
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<td></td>
<td></td>
<td></td>
<td>HOMEWORK DUE - THURSDAY 7/26 at 11:59 PM</td>
</tr>
<tr>
<td>11</td>
<td>Tues 7/24</td>
<td>Multiple Regression, cont.</td>
<td>Ch 13.9</td>
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<tr>
<td></td>
<td>Thurs 7/26</td>
<td>Review Session</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Tues 7/31</td>
<td>FINAL EXAM</td>
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Appendix

USC Marshall
School of Business

Undergraduate Program Learning Goals

According to the AACSB, the Learning Goals state how the degree programs demonstrate the Marshall mission. Learning Goals should be broad statements, describing the goal of learning as well as the outcome. Accordingly, below the goal is what Marshall intends the students should be and the outcome further describes students’ application and transfer of knowledge. The goals should express expectations that reflect the depth and breadth of student knowledge and skills that are sustainable foundations for life-long learning in support of their professional and personal development.

1. **Our graduates will have an understanding of the key business areas and their interplay to effectively manage different types of modern enterprise.**
2. **Our graduates will have a global mindset demonstrating an understanding of the interplay of local, regional, and international markets, and economic, social and cultural issues.**
3. **Our graduates will demonstrate critical thinking skills, decision-making, and problem-solving abilities to strategically navigate complex demands of business environments.**
4. **Our graduates will demonstrate leadership skills aspiring to be sensible, future-oriented leaders and innovators.**
5. **Our graduates will demonstrate ethical reasoning skills, understand social, civic, and professional responsibilities and aspire to add value to society.**
6. **Our graduates will be effective communicators in speaking and writing to facilitate information flow in organizational, social, and intercultural contexts.**

**Learning objectives associated with each learning goal:**

1. **Learning goal:** Our graduates will have an understanding of the key business areas and their reciprocity to effectively manage different types of modern enterprise.

   - Students will gain factual, conceptual, procedural, and metacognitive knowledge of the following areas: Accounting, finance, marketing, management & organizational behavior, operations and information management, and entrepreneurship.
   - Students will integrate disciplinary knowledge to develop a general management perspective and know how to tailor it to different types of modern enterprise.
   - Students will understand and utilize current technology in all disciplines.

2. **Learning goal:** Our graduates will have a global mindset demonstrating an understanding of the interplay of local, regional, and international markets, and economic, social and cultural issues.

   - Students will understand the complexities of business in the global economy and society, including its local, regional and global impact.
   - Students will understand the different markets such as product, capital, commodity and factor, labor and global markets.
• Students will apply theories, models, and frameworks to analyze those markets.
• Students will have knowledge of the role of the legal, regulatory, competitor, financial, and consumer environments on business.
• Students will have knowledge of other cultures and their implications for business practice.
• Students will be able to adapt behavior and business practices to diverse business environments and cultures.

3. Learning goal: Our graduates will demonstrate critical thinking skills, decision-making, and problem-solving abilities to strategically navigate complex demands of business environments.

• Students will gather, categorize, analyze, interpret, and evaluate relevant qualitative and quantitative information.
• Students will critically question problems, competing priorities and points of view in situations characterized by ambiguity and/or uncertainty.
• Students will apply analytic tools and frameworks of business disciplines to create and defend well-reasoned conclusions and solutions based on relevant criteria and standards.
• Student will develop abstract ideas and design novel conceptual frameworks based on facts and theories.

4. Learning Goal: Our graduates will demonstrate leadership skills aspiring to be informed, sensible, future-oriented leaders and innovators.

• Students will recognize the intricacies of individual and organizational group behaviors and demonstrate leadership skills at all levels in organizations, such as team leadership, departmental leadership, executive leadership, and entrepreneurial leadership.
• Students will demonstrate the ability to be creative and innovative thought-leaders.

5. Learning goal: Our graduates will demonstrate ethical reasoning skills, understand social, civic, and professional responsibilities and aspire to add value to society.

• Students will understand and abide by professional codes of conduct.
• Students will understand the importance of ethics across cultures.
• Students will know how to apply ethical frameworks to assess appropriate courses of conduct.
• Students will recognize situations and issues that present ethical challenges and will be able to develop solution approaches.
• Students will understand businesses’ responsibilities to stakeholders and moral obligations to society at large.

6. Learning goal: Our graduates will be effective communicators in speaking and writing to facilitate information flow in organizational, social, and intercultural contexts.

• Students will assess and characterize diverse communication goals and audience needs across cultures and utilize the appropriate oral or written form of communication as well as applicable media and technology.
• Students will understand interpersonal and organizational communication dynamics and implement effective internal and external organizational communication strategies.
• Students will conduct research using a broad range of sources, synthesizing and judging the quality of collected information and support their written or oral claims logically and
• Students will write effectively in professional contexts and in all common business formats.
• Students will create and deliver context specific presentations and/or lead meetings individually or collaboratively.