**Course:** BUS 215, Introduction to Business Statistics

**Semester:** Spring 2020

**Instructor:** Jae Y. Lee, Ph.D.

**Instructor Contact Information:**


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- *Office Hours:* Tuesday & Thursday, 09:30 ~ 11:30 or by Appointment
- *TA :* TBD


**Meeting Time:** Tuesday & Thursday, 15:30 - 16:50

**Location**: Omyong Hall, (TBD)

**Course Description**:

The application of current statistical methods to problems in the modern business environment. Topics include probability, random variables, sampling techniques, confidence intervals, hypothesis testing, and regression. Students analyze real data sets using standard statistical software, interpret the output, and write extensively about the results.

*Prerequisite:* BUS Maj/Min, CME Major, or ISE Major
*Advisory Prerequisite:* BUS 110, 111, 112, 115, and MAT 122 or higher; BUS or ISE Major; BUS 210

3 credits

**Why Do Business Students Take Statistics?**

In your career, you will often face situations in which a clear understanding of statistical thinking will be essential. Throughout this course, you will

- become acquainted with statistical concepts and methods used **in business decision-making**,
- learn how to apply these methodologies **to model**, solve and analyze problems encountered in business management,
- gain skill in the use of statistical software as a **decision support tool**, and
- become a **wise consumer** of statistical analyses performed by others.

**If you are interested in finance**, you know that investment strategy is all about return and risk. How will a portfolio fare in an uncertain world? Why do well-informed investors include funds that perform well in certain circumstances and others that perform poorly under the same circumstances? How can you measure the volatility of a stock relative to the market? Understanding uncertainty, expected value, variance, regression analysis, and correlation will provide you with a strong competitive advantage over those who do not.

**If you are interested in marketing**, you know that successful marketers have a good understanding of the markets they target. How do they obtain such knowledge? How do marketers design surveys and other data collection devices that will give them a clear and unbiased look at their markets? What traps must they avoid so as not to make serious mistakes? How many people must they survey, and how must they select those people, to obtain the precision that they need without incurring undue cost? Understanding the principles of random sampling, types of nonrandom errors that can destroy a data set, and some simple ways to judge the size of the sampling error present in any data set will provide you with a strong competitive advantage over those who do not.

**If you are interested in operations**, you know that keeping a business running smoothly requires that you keep in touch with current operations. How do you know when a production line is producing too many defective items and needs adjustment, repair, or recalibration? How can you tell which suppliers are the most dependable links in your supply chain? What inventory levels should you maintain to keep customers happy and costs low? Will a proposed new computer information system speed customer orders or will it simply be a large expense with little significant impact on the company's bottom line? Understanding the principles of sampling distributions, estimation, confidence intervals, and hypothesis testing, will provide you with a strong competitive advantage over those who do not.

Whether you are interested in **human resource management, information systems management, health care management, or any other business discipline** you will need to understand how to deal with problems like these. Whether you work in energy, transportation, retailing, business-to-business, real estate, or any other industry you will find yourself making decisions in an uncertain environment in which your ability to analyze data (and understand analyses performed by others) will be a key to your success.

## Student Learning Outcomes

### College of Business Program Learning Outcomes:

This course contributes to the College of Business Learning Objectives:

(3) Critical Thinking and Analysis

Goal: Students will demonstrate the ability to think critically and to support decisions using analytical methods

- Objective: **Think critically**
- Objective: **Use analytical methods to support decision making**

Throughout the course, you will learn how to think critically about business problems and how to apply standard statistical methods to analyze these problems in order to improve decision-making. These outcomes will be assessed through examinations and homework assignments.

**Course Specific Learning Outcomes and Assessment of Student Work:**

| Upon successful completion of this course, you will: | Assessment Activity |
|---|---|
| recognize the many types and sources of business-related data, | Exam 1 and HW for Chapter 2 |
| recognize the many acceptable and unacceptable ways to collect data, | Exam 1 and HW for Chapter 2 |
| be able to summarize data through the use of summary statistics and statistical charts to support business decision-making, | Exam 1 and HW for Chapters 3 & 4 |
| understand the major importance of variability in business decision-making, | Exam 1 and HW for Chapters 3 & 4 |
| understand and be able to use basic probability concepts and probability distributions to solve problems related to business, | Exams 2 and HW for Chapters 5, 6, & 7 |
| understand the basic concepts of sampling and the nature of sampling distributions, | Exam 2 and HW for Chapters 2 & 8 |
| be able to compute and interpret confidence intervals for percentages and means and apply them in business decision-making contexts, | Exam 2 and HW for Chapter 8 |
| be able to perform and interpret one- and two-sample hypothesis tests for percentages and means and apply them in business decision-making contexts, and | Exam 3 and HW for Chapters 9 & 10 |
| be able to construct and interpret univariate and multivariate regression models and apply them in business decision-making contexts. | Exam 3 and HW for Chapters 12 & 13 |

**Required Texts & Other Course Materials:**

- **Applied Statistics in Business and Economics**, 6th Edition; Doane and Seward; McGraw-Hill Irwin, 2019 **OR** use the eBook version within Connect® Plus.
- Microsoft® Excel (installed on computers in labs around campus).

**Course Requirements & Grading Information**:

***Examinations:***

-There will be three offline exams.

-Exam 1 is tentatively scheduled for Tuesday March 31, during the regular class time.

-Exam 2 is tentatively scheduled for Thursday May 7, during the regular class time.

-Exam 3 will be given on the final exam week, and exam time would vary according to the final exam schedule. (tentatively scheduled on June 16, 09:00~11:30)

-There will be **no makeup exams** except under **extreme conditions**. I will not give make-up exams without (a) advanced notice that you will miss the exam, and (b) written documentation explaining the reason for your absence. I will judge the adequacy of the reason and the appropriateness of a make-up exam. I reserve the right to format the make-up exam as an oral exam. Missed exams will be assigned a grade of zero.

***Homework Assignments:***

-Homework assignments for chapters of the text must be completed and turned in within the due date and you must show all your works to get each solution.

-Homework assignments will be posted on the Assignments page in Blackboard. You must access the assignments via these links in order for your grade to be recorded in the Blackboard grade book.

-You must work alone on these assignments. You may use the textbook and any documents that I have posted on Blackboard to assist you in completing these assignments.

-Each assignment will open when the chapter is first covered in class and will typically close one week after the chapter is completed.

-Please pay attention to opening and closing dates as no late submissions will be accepted – no exceptions.

***Grading System:***

-The table below shows the grading allocation for the course.

-You will need more than 90% course average to receive a final grade of A, more than 80% for a B, and more than 70% for a C.

-I will also use plus and minus final letter grades. I do not "curve" grades, meaning that potentially everyone in the class can earn an A.

| Midterm 1 | Midterm 2 | Final Exam | Assignment | Attendance |
|---|---|---|---|---|
| 25% | 25% | 30% | 10% | 10% |

**Blackboard**: (should be adjusted to fit SUNY Korea when you are in Songdo campus)

You can access class information on-line at: http://blackboard.sunysb.edu. If you have used Stony Brook's Blackboard system previously, your login information (Username and Password) has not changed. If you have never used Stony Brook's Blackboard system, your initial password is your SOLAR ID# and your username is the same as your Stony Brook (sparky) username, which is generally your first initial and the first 7 letters of your last name.

If you are having trouble logging into Blackboard, you will need to log into SOLAR to verify your **Net ID username & set your Net ID Security Question and Password.** For more information, visit: http://clientsupport.stonybrook.edu/

If you are a student and continue to have a problem logging into Blackboard, you will need to bring photo ID to either the Melville Library SINC Site Room S1460 or the Union SINC Site Room 080 and speak to a Blackboard Administrator from Saturday - Friday from 9 am - 5 pm.

The Blackboard website will contain important information and documents. You should visit the site on a daily basis. The Announcements page will indicate the latest additions/updates to the website and where these additions/updates can be found. Links to course notes and other lecture files will be placed in folders on the Course Documents page. Information about the instructor and the student assistant will be posted on the Faculty Information page. A link to the syllabus will be placed on the Course Information page. Links to Connect® exams and homework assignments will be posted on the Assignments page. You must access the exams and assignments via these links in order for your grade to be recorded in the Blackboard grade book. You will also be able to check your grades on Blackboard.

**Academic Integrity:** Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

**The College of Business Statement Regarding Academic Dishonesty:** The College of Business regards any act of academic dishonesty as a major violation punishable by severe penalties, including dismissal from the University. University policy requires that instructors and GAs report all suspected cases of academic dishonesty to the appropriate Academic Judiciary Committee, which is empowered to take strong action against violators, including expulsion from the University. Please note that there is a link to the Academic Judiciary web site on the Blackboard home page.

Under no circumstances will the College of Business permit cheating of any kind. Many activities constitute academic dishonesty. The following list is not inclusive, only suggestive:

*On Examinations:*

- Referring in any way to the examination paper of another student.
- Use of materials (notes, books, etc.) not explicitly permitted by the instructor.
- The exchange of any information concerning the examination with any other person after the examination has begun.

*On Papers:*

- The submission in whole or part of the work of another person as if it were your own.
- The citation of the work of others without proper reference and credit.

If you have any questions about the honesty of an action, please consult with any faculty member for clarification. We will not construe such consultation as evidence that you have committed any violation or are even contemplating it. We will not accept failure to understand the rules as an excuse.

If you are considering any act of academic dishonesty, the College of Business advises you in the strongest possible terms to abstain. The consequences associated with academic dishonesty are substantial enough literally to ruin your career. DON'T DO IT.

***What is Plagiarism?***

There is nothing wrong with using the words or thoughts of others or getting help. Indeed, it is good to do so as long as you explicitly acknowledge your debt. It is plagiarism when you pass off the work of others as though it were your own:

- Copying without quotation marks or paraphrasing without acknowledgment from the writing of someone else.
- Using someone else's facts or ideas without acknowledgment.
- Submitting work in one course that you submitted for credit in another course without the permission of both instructors.

You can strengthen your paper by using material by others – as long as you acknowledge your use, and as long as you use that material as a building block for your own thinking rather than a substitute for it. When you use published words, data, or thoughts, you must footnote your use. (See any handbook or dictionary for footnote formats.) When you use the words or ideas of friends or classmates, you should thank them in an endnote (e.g., "I am grateful to my friend so-and-so for the argument in the third paragraph.") If friends just give you reactions but no suggestions, you need not acknowledge that help in print (though it is gracious to do so).

The academic and business worlds depend on people using the work of others for their own work. Dishonesty destroys the possibility of working together as colleagues. Faculty and researchers do not advance knowledge by passing off the work of others as their own. Students do not learn by copying what they should think out on their own. Therefore, the University insists that instructors report every case of plagiarism to the Academic Judiciary Committee, which keeps records of all cases. The recommended penalty for plagiarism is failure for the course and possible expulsion from the University.

Unintentional plagiarism is still plagiarism. You cannot plead ignorance. Therefore, if you have any questions about the proper acknowledgment of help, be sure to ask your instructor.

**Class Schedule:**

| Class | Date | Chapter | Topic |
|---|---|---|---|
| 1 | 2/25 | 1 | Introduction |
| 2 | 2/27 | 2 | Data Collection |
| 3 | 3/3 | 3 | Describing Data Visually |
| 4 | 3/5 | 3 | Describing Data Visually |
| 5 | 3/10 | 4 | Descriptive Statistics |
| 6 | 3/12 | 4 | Descriptive Statistics |
| 7 | 3/17 | 5 | Probability |
| 8 | 3/19 | 5 | Probability |
| 9 | 3/24 | 5 | Probability |
| 10 | 3/26 | 1~5 | Review |
| 11 | 3/31 | 1~5 | Midterm Exam 1 |
| 12 | 4/2 | 6 | Discrete Distributions |
| 13 | 4/7 | 6 | Discrete Distributions |
| 14 | 4/9 | 6 | Discrete Distributions |
| 15 | 4/14 | 7 | Continuous Distributions |
| 16 | 4/16 | 7 | Continuous Distributions |
| 17 | 4/21 | 8 | Sampling Distributions and Estimation |
| 18 | 4/23 | 8 | Sampling Distributions and Estimation |
| 19 | 4/28 | 8 | Sampling Distributions and Estimation |
| | 4/30 | No Class | Budda's Birthday |
| | 5/5 | No Class | Children's day |
| 20 | 5/7 | 6~8 | Midterm Exam 2 |
| 21 | 5/12 | 9 | One-Sample Hypothesis Tests |
| 22 | 5/14 | 9 | One-Sample Hypothesis Tests |
| 23 | 5/19 | 10 | Two-Sample Hypothesis Tests |
| 24 | 5/21 | 10 | Two-Sample Hypothesis Tests |
| 25 | 5/26 | 12 | Bivariate Regression |
| 26 | 5/28 | 12 | Bivariate Regression |
| 27 | 6/2 | 13 | Multiple Regression |
| 28 | 6/4 | 13 | Multiple Regression |
| | 6/9 | 1~13 (Q & A) | Total Review (Optional) |
| | 6/16 (Tu) | Comprehensive (1~10, 12~13) | Final Exam (09:00~11:30) |