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| [**Stern School of Business**](http://www.stern.nyu.edu/Internal.html)  [**New York University**](http://www.nyu.edu/) |

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| **Course:** GB.1305.S1- Statistics & Data Analysis **Semester:** Spring 2020 (2/15/2020 – 5/9/2020)  **Class Hours:** 1:00 pm – 4:00 pm **Class Rm: KMC 2-65**  **Instructor:**Arde Shahmaei **Email:** ashahmae@stern.nyu.edu  **Office Hours:** 12:00 – 1:00 pm on scheduled class days  **Office:** KMC 8-171B**Tel:** 212-998-0468  **Teaching Fellow:** Elizabeth Krivan **Email:** ek3009@stern.nyu.edu  **TA Office Hours:** 4pm-5pm on scheduled class days **except 3/14, 4/11 and 4/18.** Makeup office hours TBD. Also available to meet via Webex upon request.  **Office Hour Location:** KMC 3rd Floor Lounge  **Tel**: 646-891-7937 🡨feel free to call or text |  |

***Course Description / General Remarks***

The course GB.1305 is designed to achieve an understanding of fundamental notions of data presentation and analysis and to use statistical thinking in the context of business problems. The course deals with modern methods of data exploration (designed to reveal unusual or problematic aspects of data bases), the uses and abuses of the basic techniques of inference, and the use of regression as a tool for management and for financial analysis. The potential ethical issues related to each topic will be reviewed. Socially and environmentally relevant data will be utilized throughout the course.

***Texts and Other Class Materials***

The course textbook for spring 2020 is optional. Statistics for Business Decision Making and Analysis, by Robert Stine and Dean Foster (S & F) second edition Pearson. PowerPoints and handouts will be posted on NYU Classes and distributed on the first day of class.

**MINITAB 19** - Statistical computing will be done with the Minitab 19 for Windows. This program is available at: https://apps.stern.nyu.edu/Citrix/NYUSternWeb/

***Grading Information***

Exams will be given in class and are not comprehensive in that they only cover material developed since the preceding exam.

Mid-term Exam 40%

# Final Exam 40%

# Homework 20%

***Assignments***

Exercises, handout assignments and data files will be posted on NYU Classes. The exercises will be reviewed during the following class. Handout assignments will be assigned in advance. Your solutions for the handout assignments should be submitted

by 1:00 PM on the due dates. If for any reason you cannot attend the class when an assignment is due you should email the assignment to your TF prior to due time and date.

The due dates are listed in the fourth column on the next page. It is essential that each student understands and solves the assigned problems. **Late handout assignments will not be accepted.**

**Make-up Policy:**

Make-up exams are only given in the case of documented serious illness, family emergency, religious observance, or civic obligation.

**Students with disabilities:**   
If you have a qualified disability and will require academic accommodation of any kind during this course, you must notify me at the beginning of the course and provide a letter from the Henry and Lucy Moses Center for Students with Disabilities (CSD, 998-4980, [www.nyu.edu/csd](http://www.nyu.edu/csd)) verifying your registration and outlining the accommodations they recommend.  If you will need to take an exam at the CSD, you must submit a completed Exam Accommodations Form to them at least one week prior to the scheduled exam time to be guaranteed accommodation

**Health and Wellness:**

To access the University’s extensive health and mental health resources the NYU Wellness Exchange. You can call the hotline (212-443-9999), available 24 hours a day, seven days a week, to reach out to a professional who can help to address day-to-day challenges as well as other health-related concerns.

Please arrive promptly for the start of class.  Late entrances are disruptive to the discussion.   Also, **please remember to turn off cell phones.**

Please do not use laptop computers in class.  If you have a special need for a laptop, please consult Professor Shahmaei. 

***Topical Outline***

The abbreviation S&F below refers to Stine and Foster, the course textbook.

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| ***Topical Heading*** ***/ Date*** | ***Specific Topics*** | ***Readings and*** ***Homework*** | ***Assignment due*** |
| Basic Data Summary Date: **S** 2/15/20 | Types of data, descriptive statistics, Pareto chart, stem and-leaf, box plot, mean, standard deviation | S&F , Chapters 1-4  Exercises: |  |
| Basic Concepts of Probability Date: **S** 2/22/20 | Algebra of events, definition of probability, conditional probability and independence, Expected Value, Variance, Standard deviation, Covariance, correlation | S&F, Chapter 7-10 Exercises: |  |
| Specific Distributions Central Limit Date: **S** 3/29/20 | Binomial distribution, Poisson distribution, normal distribution Sampling Distributions, Central Limit theorem. | S&F, Chapters 11, 12, 14 Exercises: | Handout assignment I |
| Point Estimation Confidence Intervals Date: **S**  3/7/20 | Confidence interval for mean and proportion | S&F, Chapter 15 Exercises: |  |
| Hypothesis Testing and Inference Date:  **S** 3/14/20 | Structure of tests, practical and statistical significance, Type I and Type II error, tests for mean, tests for proportion. **Review** | S&F, Chapter 16 Exercises: | Handout assignment II |
| **Spring Break** Date: 3/21/20 | **No Class** |  |  |
| Comparing Two SamplesDate: S 3/28/20 | Comparing the mean of two populations, and tests for proportions, comparison of two groups | S&F, Chapter 17 sections: Exercises: |  |
| **Mid-term Exam**  **Date: S 4/4/20** | . **Chapters 1-4, 7-16** |  |  |
| Simple Linear Regression Date: **S** 4/11/20 | One predictor model, least squares, inference, *t* and *F* tests, *R*2, prediction. | S&F, Chapters 19, 21, 22 Exercises: | Handout assignment III |
| Simple Linear Regression Date: **S** 4/18/20 | Checking of assumptions, regression diagnostics. |  |  |
| Multiple Regression Date: **S** 4/25/20 | Multiple regression model, *t* and *F* tests, interpretations of coefficients, residual analysis, diagnostics. | S&F, Chapter 23 Exercises: |  |
| Constructing a Multiple Regression Date: **S** 5/2/20 | Multicollinearity, Dummy Variable, model selection, transformations. **Review** | S&F, Chapter 24 | Handout assignment IV |
| **Final Exam Date: S 5/9/20** | **Chapters 17, 19, 21-24** |  |  |