**IT 403 Statistics and Data Analysis   
Th 5:45PM - 9PM, LEWIS 01511 at the Loop Campus for 701   
and online for 710**

**Fall 2019 Course Syllabus**

**Instructor** Zoaib Mirza  
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**Office Hour/Contact Hours**: Th at 1:20 - 2:05 pm or by appointment, we can also do remote meeting like Facetime at any time based on our availability

**Summary of Course**   
The aim of the course is to illustrate statistical and data analysis methods and basic concepts of probability theory. The course topics include descriptive statistics, data visualization, an introduction to statistical inference (confidence intervals and hypothesis testing), analysis of two-way tables and linear regression models. The students will learn the statistical package SPSS and use it to compute statistical analyses of data sets from real-world applications. The objectives of this course are:

* to develop an understanding of the basic concepts of probability and statistics,
* to help students to be informed and critical readers of quantitative arguments,
* to provide sufficient skills to apply simple statistical techniques with the aid of a computer,
* to appreciate the role of statistics in empirical research and scientific study,
* to gain flexible problem-solving skills applicable to unfamiliar statistical settings.

**Prerequisites**: Students are expected to understand basic mathematical notation and be familiar with college algebra concepts. See this link for a good online tutorial: <http://www.wtamu.edu/academic/anns/mps/math/mathlab/col_algebra/index.htm>    
  
**Required Textbook and Online Resources**:

* Introduction to the Practice of Statistics, Ninth Edition, by D.S. Moore, G.P. McCabe and B. Craig. (NOTE: Previous editions of the book are fine)
* An excellent online resource is the free statistics book at <http://onlinestatbook.com/2/index.html>
* Notes and video tutorials about SPSS will be posted at the course website <http://offices.depaul.edu/is/services/technology-training/Pages/online-training.aspx>.
* Lynda Playlist IT 403: A playlist has been created for you to access resources for IT 403. <https://www.lynda.com/SharedPlaylist/3fc343faa912436caa0242cd8e9dcf06?org=depaul.edu>

**Statistical package**  
The statistical package used in this course is SPSS (Statistical Package for social Sciences) and is available in all DePaul labs. You can access SPSS remotely by using our CDM terminals (suitable for fast connections). More information about the software is posted on the course website.

<http://offices.depaul.edu/information-services/services/Software/Pages/Software-for-the-Virtual-Lab.aspx>   
  
**Grading Policy.**The final grade has the following components:

* Homework assignments (60%)
* Midterm (20%)
* Final (20%)
* Extra credit (10%)
* Grading scale
  + A    94 and above
  + A-   90 - 93
  + B+  87 - 89
  + B    84 - 86
  + B-   80 - 83
  + C+  77 - 79
  + C    74 - 76
  + C-   70 - 73
  + D+  67 - 69
  + D    64 - 66
  + D-   60 - 63
  + F     Less than 60

**Tutors**  
CDM offers free tutoring for many of its courses. The tutors’ schedule is at: <http://www.cdm.depaul.edu/advising/Pages/TutoringProgram.aspx>.

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| Tentative Schedule | |
| Week 1 | SEGMENT 1: Exploratory data analysis (EDA). Analyzing univariate distribution using graphs (histograms, bar charts, pie charts, and boxplots) and summary statistics for center and spread. Cross Tabulations. |
| Week 2 | SEGMENT 2: Density functions and Normal distribution. Using the normal distribution to approximate symmetric distributions, normal quantile plots to test normality assumptions. |
| Week 3 | SEGMENT 3: Data Relationships: Scatter plots and correlation. Introduction to regression analysis. Model fitting and diagnostic, residual analysis. |
| Week 4 | SEGMENT 4: Design of experiments, observational studies. Sample surveys. |
| Week 5 | SEGMENT 5: Randomness and the language of probability. Probability rules. Random variables, expected value and variability. |
| Week 6 | MIDTERM  SEGMENT 6: Toward statistical inference. Sampling distribution for sample averages. Estimating averages using Confidence Intervals. |
| Week 7 | SEGMENT 7: Sampling distributions for proportions. Estimating proportions using confidence intervals. |
| Week 8 | SEGMENT 8: Hypothesis Testing. Significance tests on averages and proportions. |
| Week 9 | SEGMENT 9: Contingency tables and Independence tests. |
| Week 10 | FINALS SEGMENT: Review for final exam. |
| Finals Week: | Final exam |

**University Academic Integrity Policy**  
Students are expected to strictly adhere to the University Academic Integrity Policy, that is published in the Student Handbook or at the Academic Integrity site at DePaul University ([http://academicintegrity.depaul.edu](http://academicintegrity.depaul.edu/)). Violations of the University Academic Integrity Policy include (but are not limited to): (a) using or providing unauthorized assistance or materials on course assignments; (b) possessing unauthorized materials during an examination; (c) submitting as one's own any material that is copied from published or unpublished sources such as the Internet, print, computer files without proper acknowledgement that it is someone else's; (d) submitting as one's own work a report, examination, paper, computer file, lab report or other assignment which has been prepared by someone else.   
  
If you are unsure about what constitutes unauthorized help on an exam or assignment, or what information requires citation and/or attribution, please ask your instructor. If proven, violations may result in the failure of the assignment, failure of the course, and/or additional disciplinary actions.

**Preferred Name & Gender Pronouns.**

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University related systems and documents except where the use of the legal name is necessitated or required by University business or legal need.  For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at <http://policies.depaul.edu/policy/policy.aspx?pid=332>

**Acknowledgement**   
This course has been adopted and modified from Prof. Mopé Adelakun original content from IT 403