DEPAUL UNIVERSITY CDM
IT 403 STATISTICS AND DATA ANALYSIS (SUMMER 1, 2015)
SYLLABUS, CLASS SCHEDULE & POLICIES

COURSE: IT 403- Statistics and Data Analysis

START AND END DATES: June 15– July 19, 2015 [Tuesdays & Thursdays, 5:45 PM- 9 PM CST]

LOCATION:

|		
SECTION 201	In-Class session	CDM Room 220
SECTION 210	Distance learning session	No class room- students view recorded lectures

INSTRUCTOR:

RAY Partha Sarathy   Email: rpartha1@cdm.depaul.edu   Phone: 312-362-1257 (*no voicemail*)
Office hours: 4:45 PM – 5:30 PM [Tuesdays & Thursdays]
Office location: CDM 709 *(come to the CDM building seventh floor lobby and call the phone number provided above)*
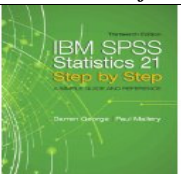
COURSE MATERIALS:

Textbook (Required):
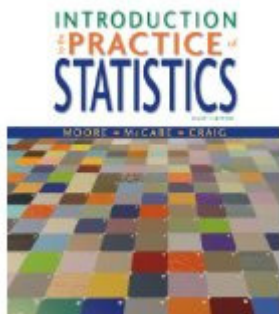
Moore, D.S., McCabe, G.P., & Craig, B. (2014). Introduction to the Practice of Statistics (8th Ed.). W.H. Freeman (McMillan) Publication.

Mode	ISBN-10	ISBN-13
Print/Paper Book (your bookstore, amazon.com, ebay.com etc.).	1464158932	978-1464158933
Other Options	eBook (Kindle)	
Rent book from chegg.com	http://www.chegg.com/textbooks/introduction-to-the-practice-of-statistics-8th-edition-9781464158933-1464158932?trackid=43ebde40&strackid=369daaf0&ii=8	

Supplementary Readings/References [you are <u>not</u> <u>required</u> to buy these books, if you choose to buy them, you could buy older editions from e-bay or amazon---no need to buy the latest editions]

	George, D. & Mallery, P. (2013). IBM SPSS Statistics Step-by-Step	ISBN-13: 978-0205985517

COURSE DESCRIPTION:

The aim of the course is to illustrate statistical and data analysis methods and basic concepts of probability theory. Some key course topics include descriptive statistics, data visualization, an introduction to statistical inference, and linear regression models. The students will use the statistical package SPSS in statistical analyses of data sets. *SPSS will be used as a means to an end (to simplify certain statistical calculations), and not as an end in itself (the goal in this course is to teach Statistics, not to teach SPSS).*

PREREQUISITE COURSES: None. However, students are expected to understand basic mathematical notations 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. Knowledge of Microsoft Excel will be helpful and is preferred.

COURSE OBJECTIVES:

- to assist the students in developing an understanding of the basic concepts of probability and statistics,
- to help the students become informed and critical readers of quantitative arguments,
- to provide sufficient skills to apply simple statistical techniques
- to help the students gain an appreciation for the role of statistics in empirical research and scientific study,
- to help the students to gain flexible problem-solving skills applicable to unfamiliar statistical settings.

COURSE SCHEDULE, TOPICS, AND ACTIVITIES:

The following course schedule is a tentative schedule subject to changes as needed throughout the term. When changes are made, the updated document will be posted in D2L. It is the student's responsibility to keep track of changes to this schedule by viewing this schedule in D2L every week.

Session	Date	Main Topics
1 (Week 1) & 2(Week 1)	June 16 & June 18	Introductions/Course Overview MODULE 1: Introduction to Statistics and Statistical terminology, Descriptive and Inferential Statistics, Types of data and their treatment, Exploratory data analysis, Use of graphs such as histograms, bar charts, box plots, stem-and-leaf plots to analyze and display data, Statistics for central tendency and spread, Types of variables, Categorical variable, Two way tables and their analysis, Simpson's Paradox, Introduction to distributions and examining distributions, Time Plots, Chebyshev's rule and its application, How to present the findings of data exploration
2 (Week1)	June 18	Complete Module 1 MODULE 2: Density curves, Random variable, Normal distributions and their properties, Normal distribution applications, Testing the normality assumption, Shapiro-Wilk's test
3 (Week 2)	June 23	Complete Module 2 MODULE 3: Data relationships, Scatter Plots, Correlation, Pearson vs Spearman Correlation, Coefficient of determination, Correlation vs causation, Lurking variable and confounding variable, Introduction to regression analysis, Simple Linear Regression/Least Squares Regression, model fitting, Residuals and residual plots in regression, Treatment of outliers and extrapolations in regression
4 (Week 2)	June 25	Complete Module 3 MODULE 4:Experimental designs, Data types, Surveys, Confounding, Factors and treatments, Comparative experiments, Randomization, Matched pairs, Blocked designs, Principles and types of sampling, Bias and variability
5 (Week 3)	June 30	MODULE 5: Probability-Probability models and rules, Random variable and its applications, Statistical estimation, Law of large numbers, Venn diagrams, Tree diagrams, Bayes theorem
6 (Week 3)	July 2	Complete Module 5 MODULE 6: Sampling distribution for averages/means, Central limit theorem, Sampling distributions for counts and proportions, Binomial distribution and Binomial probability, Normal approximation to the Binomial distribution and its applications.
7 (Week 4)	July 7	MODULE 6: Sampling distribution for averages/means, Central limit theorem, Sampling distributions for counts and proportions, Binomial distribution and Binomial probability, Normal approximation to the Binomial distribution and its applications.
8 (Week 4)	July 9	MODULE 7:Introduction to statistical inference, Confidence interval and confidence levels, Sample size calculations, P value, Hypothesis testing
9 (Week 5)	July 14	MODULE 7:Introduction to statistical inference, Confidence interval and confidence levels, Sample size calculations, P value, Hypothesis testing Course review for the final exam
10 (Week 5)	July 16	Final Exam

FOR FURTHER DETAILS REFER TO THE DETAILED SYLLABUS POSTED IN D2L OR CONTACT THE INSTRUCTOR.