



CMGT 507 Information Management
Units: 4

Fall 2019 – 21711D
Wednesday, 6:30 - 9:20 pm
Location: ANN 210

Instructor: Liuning "Matt" Zhou, Ph.D.
Office Hours: Wednesday, 4:30 pm – 5:30 pm
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Course Description

Titled **Information Management**, this course is about data analysis and visualization. It aims to help graduate students understand the principles and techniques for extracting useful information and knowledge from data, and hone their data storytelling skills for effective communication. To accomplish these goals, the course includes three topics, fundamentals of quantitative research, data analytics and data visualization. Starting with the fundamentals of empirical research and concluding with visual display of research findings, it provides students with a conceptual understanding of research process as well as practical skills in analytics and visualization necessary to succeed as a research analyst in commercial firms and non-profit organizations.

The course consists of three modules: (i) fundamentals of quantitative research; (ii) data analytics; and (iii) data visualization. The first module reviews some key statistical concepts, components of survey research, and SPSS' syntax function for data analytics and management. The second module covers more advanced statistical techniques, including TURF analysis, correspondence analysis, regression analysis, factor analysis, and cluster analysis. The goal here is to teach students to view research problems from a data perspective and understand how to systematically analyze such problems and find solutions. Students develop a conceptual understanding and acquire practical knowledge of those procedures, as well as explore their applications in different research scenarios. The third module covers the principles behind data visualization, and introduces guidelines and techniques for designing effective visual displays to communicate research findings and messages. Throughout the semester, class meetings are conducted through a combination of lectures, in-class discussions, and group activities.

Learning Objectives

By the end of the semester, students are expected to have a good command of practical skills needed to succeed as a research analyst and data communication specialist. Specifically, students will be able to: (i) use SPSS syntax for data analysis and management; (ii) adopt appropriate statistical procedures to conduct data analyses depending on research goals and type of survey data; (iii) develop insights from analytical results; and (iv) use computer programs (e.g., Tableau) and online platforms to create data visualization packages for effective communication and storytelling.

Recommended Preparation: understanding of basic statistics concepts and applications, as well as use of Excel and SPSS

Required Textbooks and Reading Assignments

Data Visualization: a successful design process, by Andy Kirk, Packt Publishing, 2012.

Data Points: Visualization That Means Something, by Nathan Yau, Wiley, 2013.

NOTE: Certain chapters from each book will be selected as assigned readings. There is no need to purchase the textbooks; electronic copises are available at USC online libraries.

Optional Textbooks and Supplementary Materials

Data Visualization and Presentation with Microsoft Office, by Valerie M. Sue and Matthew T. Griffin, SAGE, 2016.

An Intermediate Guide to SPSS Programming, by Sarah Boslaugh, SAGE, 2005.

There are reading assignments every week (except for the first and final week). In addition to book chapters from those two books, readings come from peer-review journals on relevant topics, industry sources such as reports and white papers, and online publications. These materials are either posted in Blackboard under "Weekly Materials" or provided to students in class.

Students are expected to complete assigned readings before class and prepare for in-class discussions of the materials. Participation in discussion and response to instructor's questions are part of the participation score. Assigned readings are not a substitute for the class nor is the class designed to summarize the readings. You will find a lot of materials in lecture that are not there in your readings (and vice-versa).

The following online resources are useful for this class:

1. Market Research

www.quirks.com/articles/index.aspx

2. SPSS/Statistics

<https://stats.idre.ucla.edu/spss/>

www.onlinestatbook.com

3. Data Visualization

www.venngage.com/

www.highcharts.com/

www.piktochart.com/

<https://public.tableau.com/en-us/s/gallery>

Description and Assessment of Assignments

Student performance in this class is evaluated based on homework assignments (individual and group), a final project, and class participation, among others.

Individual and group assignments involve designing survey questionnaire, running statistical analysis using SPSS, and creating data visualizations. There is a final project due

at the end of the semester. It requires students to work in groups, analyzing data, identifying the story behind the numbers, and sharing their stories/insights through communicative images and messages. Detailed guidelines will be distributed and explained in class when they come up.

Each group is also expected to do one presentation on data visualization; it is worth 5% of the final grade.

Class participation accounts for 5% of the final grade. It consists of attendance, contributions to class discussions, substantive responses to instructor's questions, interaction with guest speakers, good efforts in group assignments, and meaningful comments on peer's work in the final project presentation.

Grading Breakdown

Individual Assignment (3 x 8%)	24%
Group Assignment (6 x 6%)	36%
Final Project	35%
Participation	5%
Total	100%

Schedule for Assignments

Week 2: Individual Assignment 1/Questionnaire re-write

Week 3: Group Assignment 1/Knowledge discovery

Week 4: Group Assignment 2/SPSS syntax for data analysis

Week 7: Individual Assignment 2/Regression analysis

Week 8: Individual Assignment 3/Cluster analysis

Week 10: Group Assignment 3/Analytical plan

Week 11: Group Assignment 4/Data visualization

Week 12: Group Assignment 5/Data visualization

Week 12-14: Group Assignment 6/Data visualization presentation

Assignment Submission Policy

You will receive details about each assignment/exam separately. All assignments need to be completed and handed in on time (in instructor's email box by 6:30 pm of the due date) to avoid a grade reduction (10% reduction from the original point). If you are unable to turn in an assignment due to illness or a personal emergency, you must provide written documentation that will allow you to be excused, or discuss your situation with me in a timely manner. Do not wait until the end of the semester to sort things out.

Grading Scale

Each assignment will be worth 100 points and will be converted to a percentage score depending upon the weight assigned to each. Your percentage scores on the assignments will be totaled and translated to a letter grade per the scale shown below:

A = 100-94	C = 76-74
A- = 94-90	C- = 73-70
B+ = 89-87	D+ = 69-67
B = 86-84	D = 66-64

B- = 83-80
C+ = 79-77

D- = 63-60
F = 59-0

Grades will be assigned as follows:

A/A-: outstanding, thoughtful and enthusiastic work

B+/B: above average work, demonstrating good insight into assignment

B-/C+: needs improvement on ideas, argument and follow through

C and below: fulfilling the bare minimum and showing little understanding of the material

If you have concerns regarding a grade on a given assignment, you must appeal it in writing, stating the reasons why you feel the grade is inaccurate, within one week of receiving the graded assignment. No late appeals will be accepted for review.

Grading Timeline

The instructor will strive to return graded assignments with feedback within a week.

Additional Policies

There is no make-up for missed classes; use of smartphone/social media for non-class related issues should be kept to a minimum.

Note: The instructor reserves the right to make changes to course contents as well as reading and homework assignments with one week prior notice.

Schedule of Class Meetings

Week 1 August 28 Module I: Fundamentals of Quantitative Research (1)	<u>Topics</u> Review of course syllabus; statistical concepts (i.e., population and sample; sampling design; normal distribution; hypothesis and null hypothesis; statistical significance; descriptive and inferential stats) <u>Lesson Activity</u> Form groups for group assignments and final project
Week 2 September 4 Module I: Fundamentals of Quantitative Research (2)	<u>Topics</u> Construct and scales; levels of measurement; reliability and validity; survey questionnaire design issues <u>Readings</u> http://onlinestatbook.com/2/introduction/levels_of_measurement.html Other relevant materials are posted in Blackboard. <u>Individual Assignment 1</u> Questionnaire re-write
Week 3 September 11 Module I: Fundamentals of Quantitative Research (3)	<u>Topics</u> Nature of data; data types and sources; data weighting; knowledge pyramid <u>Readings</u> Relevant materials are posted in Blackboard. <u>Lesson Activity</u> Exploring secondary data sources (www.data.gov; www.bls.gov; www.gss.norc.org) for knowledge discovery <u>Group Assignment 1</u> Knowledge discovery using secondary data Note: Individual Assignment 1 <u>DUE</u> by 6:30 pm
Week 4 September 18	<u>Topics</u> SPSS syntax for data analysis/ management <u>No Readings</u>

Module I: Fundamentals of Quantitative Research (4)	<u>Group Assignment 2</u> SPSS syntax for data analysis Note: Group Assignment 1 <u>DUE</u> by 6:30 pm
Week 5 September 25	<u>Topics</u> TURF analysis; correspondence analysis/conceptual mapping
Module II: Data Analytics (1)	<u>Readings</u> http://www.statsoft.com/Textbook/Correspondence-Analysis Other relevant materials are posted in Blackboard. <u>Lesson Activity</u> Research scenario for TURF analysis Note: Group Assignment 2 <u>DUE</u> by 6:30 pm
Week 6 October 2	<u>Topics</u> Linear regression; key driver analysis
Module II: Data Analytics (2)	<u>Readings</u> http://www.statsoft.com/Textbook/Multiple-Regression Other relevant materials are posted in Blackboard.
Week 7 October 9	<u>Topics</u> Binary logistic regression; multinomial logistic regression
Module II: Data Analytics (3)	<u>Readings</u> http://www.biostathandbook.com/simplelogistic.html Other relevant materials are posted in Blackboard. <u>Individual Assignment 2</u> Regression analysis using SPSS
Week 8 October 16	<u>Topics</u> Cluster analysis; segmentation; profiling study; factor analysis
Module II: Data Analytics (4)	<u>Readings</u> http://www.statsoft.com/Textbook/Cluster-Analysis Other relevant materials are posted in Blackboard. <u>Individual Assignment 3</u>

	Cluster analysis using SPSS Note: Individual Assignment 2 <u>DUE</u> by 6:30 pm
Week 9 October 23 Module III: Data Analytics (5)	<u>Topics</u> Data-based insights; banner plan and crosstabs <u>NO READINGS</u> <u>Guest Speaker 1:</u> consumer research and insights <u>Lesson Activity</u> Instructor shares data for initial discussion of final project Note: Individual Assignment 3 <u>DUE</u> by 6:30 pm
Week 10 October 30 Module III: Data Visualization (1)	<u>Topics</u> Roles of DV professionals; principles of data visualization; taxonomy of data visualization methods <u>Readings</u> Relevant materials are posted in Blackboard. <u>Group Assignment 3</u> Final Project analytical plan
Week 11 November 6 Module III: Data Visualization (2)	<u>Topics</u> Principles and techniques of graphic design; form, layout, composition, typography and colors; editorial focus and data preparation in data visualization <u>Readings</u> Relevant materials are posted in Blackboard. <u>Guest Speaker 2:</u> on graphic design and data visualization <u>Group Assignment 4</u> Data visualization using survey data Note: Group Assignment 3 <u>DUE</u> by 6:30 pm

Week 12 November 13 Module III: Data Visualization (3)	<u>Topics</u> Narrative visualization and data storytelling; data visualization for advocacy; Tableau for data visualization <u>Readings</u> Relevant materials are posted in Blackboard. <u>Lesson Activity</u> Group presentation on data visualization Group meeting with instructor on final project <u>Group Assignment 5</u> Data visualization Note: Group Assignment 4 <u>DUE</u> by 6:30 pm
Week 13 November 20 Module III: Data Visualization (4)	<u>Topics</u> Role of memory; model of perceptual processing; Tableau for data visualization <u>Readings</u> Relevant materials are posted in Blackboard. <u>Lesson Activity</u> Group presentation on data visualization Group meeting with instructor on final project Note: Group Assignment 5 <u>DUE</u> by 6:30 pm
Week 14 December 4 Module III: Data Visualization (5)	<u>Topics</u> Data fluency culture; research ethics; Tableau for data visualization <u>Lesson Activity</u> Group presentation on data visualization Group meeting to finalize final project
Week 15 December 11 Presentation	Presentation of final projects; wrap-up Final Project DUE by 11:59 pm on DECEMBER 14 in instructor's email box (liuningz@usc.edu)

Statement on Academic Conduct and Support Systems:

Academic 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” 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, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call

engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call

engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086

equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421

studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.