The Chinese University of Hong Kong
Department of Linguistics and Modern Languages
First Term, 2020-21

Course info

Course Title	LING3403 Quantitative Methods for Linguistics
Lecture & Tutorial	Thursday 11:30-14:15
Teaching Venue	Pi Chiu Room 103/105

Description

This course introduces common statistical concepts and analyses used in linguistics and applied linguistics research. It covers both descriptive and inferential statistics. Students will understand basic statistical knowledge through lectures and gain practical experience in conducting data analyses in tutorials. Students interested in doing quantitative research for their undergraduate theses should take this course. This course assumes NO prior knowledge in statistics. Students will learn how to visualize, analyze, and summarize quantitative data using Excel and R; we choose R (instead of SPSS) because the former is freely available and has gained increasing popularity in social sciences.

Content, highlighting fundamental concepts

Topic	Contents/fundamental concepts
Research design in experimental linguistics	Correlational design, cause-effect design, cross-sectional design, within/between-subject design
R as a statistical platform	R for handling data, R for statistical analyses, R for making graphs
Descriptive statistics	Mean, mode, median, distribution, z-score, standard deviation, variance, standard error
Correlation	The relation between two datasets
t-test	How to use parametric test to compare two means
ANOVA	How to compare multiple groups
Regression	How to model a set of observations using independent predictors
Non-parametric tests	How to use non-parametric tests to compare means

Learning outcomes:

- Recognize the conceptual underpinnings of common statistical tests, and apply them appropriately to answer different research questions - Visualize, analyze, and summarize data through descriptive statistics, graphical methods, and inferential statistical tests using Excel and/or R. - Interpret and evaluate quantitative findings in linguistics

Learning activities

- lectures (2 hrs/week)	- readings and off-class practice (2 hr/week)
- interactive hands-on practice (0.75 hr/week)	- group project/presentation (on average 0.1 hr/week)

Assessment scheme

Task nature	Description	Weight
Presentation	Each time a pair of students will be asked to perform a statistical analysis on a dataset and then to present their analytical approach and results in class in a 5-10 min presentation. *This can be done face to face, with Zoom as the backup method if*	20%

	the face-to-face method is not possible.	
Two quizzes	In-class formative tests on conceptual understanding of statistical techniques and actual data analysis using covered techniques; students are expected to hand in a written report on the analysis and the actual analytical scripts. *These can be done face to face, with Zoom as the backup method if the face-to-face method is not possible.*	40%
Final exam	In-class data analysis using covered techniques on actual data sets; students are required to hand in a written report and the actual analytical scripts. *This can be done face to face, with Zoom as the backup method if the face-to-face method is not possible.*	40%
		Total: 100%

Course schedule
(All teaching will be conducted face-to-face by default, but will be changed to Zoom delivery if needed. Notification will be given in advance if such change is needed)

Week	Date	Lecture
1	10-Sep	Data, variables, and R
2	17-Sep	Descriptive and design
3	24-Sep	Probabilities and transformation
4	1-Oct	*Holiday*
5	8-Oct	Correlation
6	15-Oct	T-test
7	22-Oct	ANOVA 1 (quiz 1)
8	29-Oct	ANOVA 2
9	5-Nov	Linear regression 1
10	12-Nov	*Holiday*
11	19-Nov	Linear regression 2
12	26-Nov	Non-parametric statistics 1 (quiz 2)
13	3-Dec	Non-parametric statistics 2 (revision)
14	10-Dec	Exam

Learning resources for students

Field, A. (2009). *Discovering statistics using SPSS*. Sage Publications. [Textbook for statistics]
Crawley, M. J. (2012). *The R book*. John Wiley & Sons. [Textbook for R]
Kerns, G. J. (2010). *Introduction to probability and statistics using R*. Downloadable from https://cran.r-project.org/web/packages/IPSUR/vignettes/IPSUR.pdf. [Textbook for R and statistics]

Feedback for evaluation

Students are encouraged to give feedback or comments on course contents and teaching materials throughout the course. Students can contact either the lecturer or tutor directly. See contact details below. Mandatory term-end evaluation for teacher's reflection will also be conducted.

Teachers' or TA's contact details

	Teacher	**TAs**
Name:	Prof. Zhenguang Cai	
Office Location:	Leung Kau Kui Building G5	
Telephone:	3943 7909	
Email:	zhenguangcai@cuhk.edu.hk	
Office Hour:	Monday 14:00 – 15:00, or by appointment	

Website:	http://www.cuhk.edu.hk/lin/people/

Grade Descriptors

Grade	Descriptors
A	• Excellent understanding of common statistical tests and always apply them appropriately in answering a wide range of research questions • Excellent ability to visualize, analyze, and summarize many different types of data using SPSS with very high presentation standards • Excellent ability to interpret and evaluate quantitative findings in linguistics with an extremely high degree of accuracy and aptness
A-	• Good understanding of common statistical tests and almost always apply them appropriately in answering a wide range of research questions • Good ability to visualize, analyze, and summarize many different types of data using SPSS with high presentation standards • Good ability to interpret and evaluate quantitative findings in linguistics with a high degree of accuracy and aptness
B	• Fair understanding of common statistical tests and often apply them appropriately in answering some research questions • Fair ability to visualize, analyze, and summarize some types of data using SPSS with satisfactory presentation standards • Fair ability to interpret and evaluate quantitative findings in linguistics with a satisfactory degree of accuracy and aptness
C	• Poor understanding of common statistical tests and only sometimes apply them appropriately in answering some research questions • Poor ability to visualize, analyze, and summarize some types of data using SPSS with poor presentation standards • Poor ability to interpret and evaluate quantitative findings in linguistics with only some degree of accuracy and aptness
D	• Very poor understanding of common statistical tests and rarely apply them appropriately in answering research questions • Very poor ability to visualize, analyze, and summarize limited types of data using SPSS with poor presentation standards • Very poor ability to interpret and evaluate quantitative findings in linguistics with a barely satisfactory degree of accuracy and aptness
F	• Almost no understanding of common statistical tests and almost never apply them appropriately in answering research questions • Almost no ability to visualize, analyze, and summarize very limited types of data using SPSS with extremely poor presentation standards • Almost no ability to interpret and evaluate quantitative findings in linguistics inaccurately and inaptly

Facility for teaching announcement

All teaching materials will be uploaded (either before or after lecture) onto Blackboard (https://blackboard.cuhk.edu.hk) or via email.

Academic honesty and plagiarism

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at http://www.cuhk.edu.hk/policy/academichonesty/ .

With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines and procedures. For group projects, all students of the same group should be asked to sign on the declaration.

For assignments in the form of a computer-generated document that is principally text-based and submitted via VeriGuide, the statement, in the form of a receipt, will be issued by the system upon students' uploading of the soft copy of the assignment. Assignments without the receipt will not be graded by teachers. Only the final version of the assignment should be submitted via VeriGuide.