The Chinese University of Hong Kong
Department of Linguistics and Modern Languages
First Term, 2022-23

Course Title: LING3403 Quantitative Methods for Linguistics
Description: This course introduces common statistical concepts and analyses used in linguistics and applied linguistics. It covers both descriptive and inferential statistics. Students will understand basic statistical knowledge through lectures and gain practical experience of 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 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

Lecture (hr) in /out class		Interactive tutorial (hr) in /out class		Lab (hr) in /out class		Discussion of case (hr) in /out class		Field-trip (hr) in /out class		Projects (hr) in /out class		Web-based teaching (hr) in /out class		Other (hr) in /out class	
2		0.75					0.5				0.5		1		
M	NA	M	NA	NA	NA	NA	M	NA	NA	NA	M	NA	O	NA	NA

M: Mandatory activity in the course
O: Optional activity
NA: Not applicable

Assessment scheme

Task nature	Description	Weight
Participation	Participation in lectures/tutorials, discussion, and presentation	10%
Assignment	Weekly assignment	25%
Group project	Report of an experiment	25%
Exam	In-class data analyses and reports	40%
		Total: 100%

Learning resources for students

Introductory textbooks

Levshina, N. (2015). *How to do linguistics with R. Data Exploration and Statistical Analysis*. Amsterdam-Philadelphia.

More advanced textbooks

Field, A., Miles, J., Field, Z. (2012). *Discovering statistics using R*. Sage Publications. [Reference book]
De Vries, A., & Meys, J. (2015). *R for Dummies*. John Wiley & Sons.
Crawley, M. J. (2012). *The R book*. John Wiley & Sons. [Reference book 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.

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 R 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 R 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 R 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 R 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 R 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 R with extremely poor presentation standards • Almost no ability to interpret and evaluate quantitative findings in linguistics inaccurately and inaptly

Course schedule

Week	Date	Lecture
1	8-Sep	Introduction and R
2	15-Sep	Descriptive statistics
3	22-Sep	T-tests 1
4	29-Sep	T-tests 2 (*Qualtrics*)
5	6-Oct	ANOVA 1
6	13-Oct	ANOVA 2 (*Qualtrics*)
7	20-Oct	Non-parametric tests
8	27-Oct	Binomial and chi-square test
9	3-Nov	Correlation
10	10-Nov	Linear regression 1 (*Report due*)
11	17-Nov	Linear regression 2
12	24-Nov	Revision (*Report feedback*)
13	1-Dec	**Exam**

Teachers' or TA's contact details

Professor/Lecturer/Instructor:	
Name:	Prof. Zhenguang Cai
Office Location:	Leung Kau Kui Building G5
Telephone:	3943 7909
Email:	zhenguangcai@cuhk.edu.hk
Teaching Venue:	Tuesday 10:00 – 11:00, or by appointment
Website:	http://www.cuhk.edu.hk/lin/people/
Other information:	

Teaching Assistant/Tutor:	
Name:	Xufeng Duan; Hanlin Wu
Office Location:	
Telephone:	
Email:	1155138806@link.cuhk.edu.hk; 1155167417@link.cuhk.edu.hk
Teaching Venue:	By appointment
Website:	

Other information:	

A facility for posting course announcements

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 statement that they are aware of these policies, regulations, guidelines and procedures.

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