Course Code
Applied Data Analytics
Module 1, 2022

Course Information

Instructor: Zhuo Chen
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Office Hour: 11:30 – 13:30 (Wed)

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Classes:
Lectures: Mon & Thu, 15:30-17:20
Venue: PHBS Building, Room

Course Website:
If any.

1. Course Description

1.1 Context

Course overview: Data is regarded as the new currency in the 21st Century. This course aims to help students use appropriate research methods and data science techniques to answer research questions and solve real-world problems. Going beyond theory, students will learn how to collect data through experiments, surveys, and content analysis. Students will also learn how to clean, prepare, and analyze data using R studio. This course will include new approaches such as Moderation & Mediation, Structural Equation Modelling, and various statistical learning techniques. This course will cover these approaches in the context of Communication Research: Social Media, Marketing Communications, and other important research and business decisions. Upon completion of this course, R studio will become your best partner in data analytics.

Prerequisites: No.

1.2 Textbooks and Reading Materials

Field, A. P., Miles, J., & Field, Z. (2012). *Discovering statistics using R*. Sage.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (Second edition)*. New York: Guilford Press.

Wimmer, R. D., & Dominick, J. R. (2013). *Mass media research*. Cengage learning.

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	Yes, students are required to produce a final report.
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	Yes, students are expected to actively participate in the class discussion and present their group project.
2. Our graduates will be skilled in team work and leadership.	2.1. Students will be able to lead and participate in group for projects, discussion, and presentation.	Yes, students will participate in group discussion.
	2.2. Students will be able to apply leadership theories and related skills.	Yes, with insight into business and media data.
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analyze business problems and identify the ethical aspects, provide a solution and defend it.	Yes, particularly using quantitative analysis techniques.
	3.2. Our students will practice ethics in the duration of the program.	Yes.
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	Yes, will include cases around the globe.
5. Our graduates will be skilled in problem-solving and critical thinking.	5.1. Our students will have a good understanding of fundamental theories in their fields.	Yes.
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	Yes.
	5.3. Our students will demonstrate competency in critical thinking.	Yes.

2.2 Course specific objectives

Upon successful completion of this course, students will be able to:

1. Master appropriate practices such as experimental and survey design to tackle a research question.
2. Apply proper data science techniques to the research question.
3. Deploy advanced algorithms to make predictions and improve decision making.
4. Write R-scripts.

2.3 Assessment/Grading Details

Subject	Percent of Grade
Attendance and participation	10%
Group project	50%
Assignments	40%

2.4 Academic Honesty and Plagiarism

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on

assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

3. Topics, Teaching and Assessment Schedule

Date	Topic	Recommended reading
Aug. 29	Introduction to applied data analytics	
Sep. 01	Basic statistics	Chapter 2 [Discovering statistics using R]
Sep. 05	Experimental Design	Chapter 9 [Mass media research]
Sep. 08	Analysis of Experiment Data I: t-Test & ANOVA	Chapter 9 [Discovering statistics using R]
Sep. 14	Analysis of Experiment Data II: Moderation & Mediation Analysis	Chapter 3&7 [Introduction to mediation, moderation, and conditional process analysis]
Sep. 15	Analysis of Experiment Data III: Moderation & Mediation Analysis	Chapter 3&7 [Introduction to mediation, moderation, and conditional process analysis]
Sep. 19	Survey Methodology	Chapter 7 [Mass media research]
Sep. 22	Analysis of Survey Data I: Correlation & Linear Regression	Chapter 7 [Discovering statistics using R]
Sep. 26	Analysis of Survey Data II: Logistic Regression	Chapter 8 [Discovering statistics using R]
Sep. 29	Analysis of Survey Data III: SEM I (CFA)	
Oct. 10	Analysis of Survey Data IV: SEM II (Path Model)	
Oct. 13	Analysis of Survey Data V: SEM III (Advanced)	
Oct. 17	Content/text Analysis	Chapter 6 [Mass media research]
Oct. 20	Analysis of Content/Textual Data	Chapter 18 [Discovering statistics using R]
Oct. 24	Introduction to Statistical Learning I: Clustering	Chapter 2 [An Introduction to Statistical Learning]
Oct. 27	Introduction to Statistical Learning II: Discriminant Analysis	
Oct. 31	Data processing	
Nov. 3	Recap	

4. Miscellaneous

The syllabus is subject to change with prior notice to students either in class or via email.